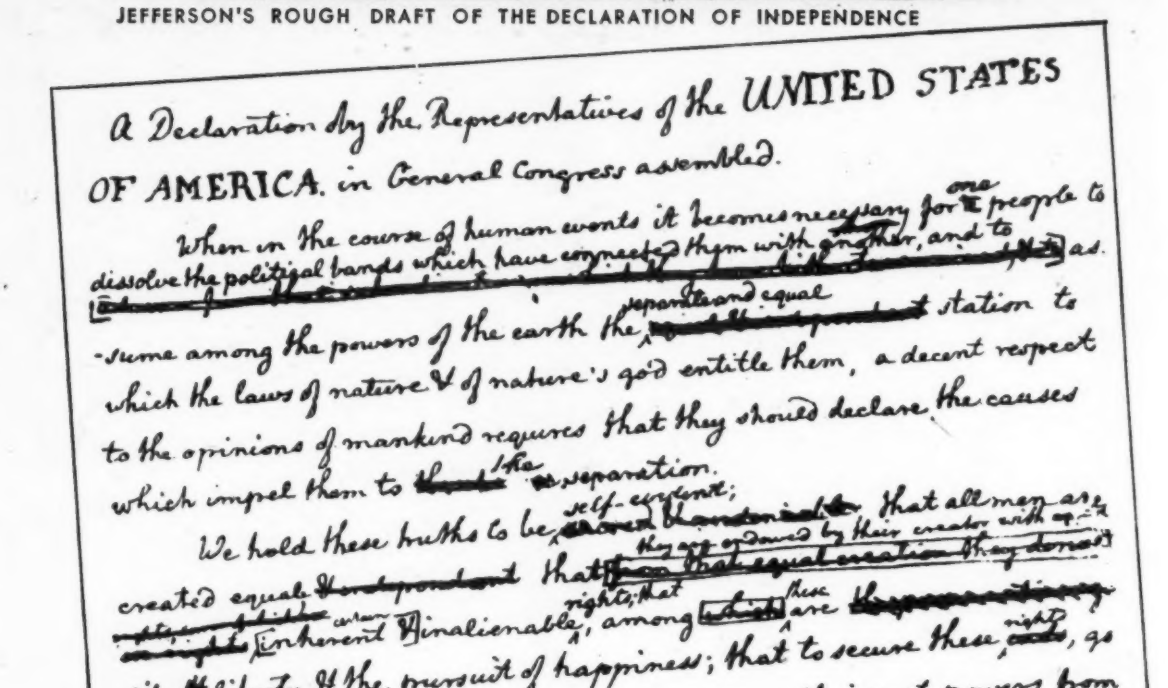
COMBINATION EDITION

Senior Scholastic

APRIL 12, 1948 • VOLUME 52 • NUMBER 10

CAUSE FOR AMERICAN PRIDE...

JEFFERSON'S ROUGH DRAFT OF THE DECLARATION OF INDEPENDENCE


A Declaration by the Representatives of the UNITED STATES
OF AMERICA. in General Congress assembled.
When in the course of human events it becomes necessary for one people to
dissolve the political bands which have connected them with another, and to
-sume among the powers of the earth the, separate and equal station to
which the laws of nature & of nature's god entitle them, a decent respect
to the opinions of mankind requires that they should declare the causes
which impel them to the separation.
We hold these truths to be self-evident;
created equal that all men are
that they are endowed by their creator with
life, liberty, & the pursuit of happiness; that to secure these, go
-vernments are instituted among men, deriving their just powers from
the consent of the governed; that whenever any form of government
becomes destructive of these ends, it is the right of the people to alter
or to abolish it, & to institute new government, laying it's foundation on
such principles & organising it's powers in such form, as to them shall

This is the original manuscript of the Declaration of Independence, written by Thomas Jefferson. The complete draft shows corrections in the handwriting of Ben Franklin and John Adams as well. It contains all of the revisions which became a part of the document that was finally presented to the Continental Congress. It is now on display aboard the "Freedom Train."

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"51" writes dry with wet ink!

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Atomic Energy . . . and You

THE CHOICE IS IN OUR HANDS

● WE HAVE all heard plenty about the sure destruction ahead of us if the atomic bomb gets out of control. It's still true, and we'd better not forget it. But there's another side of the story. We can commit wholesale suicide — or we can step forth into the "brave new world" of a larger and more abundant life. Both possibilities spring from the same source — ATOMIC ENERGY. The choice is in our hands.

In this special issue of *Senior Scholastic*, we have tried to tell the story of the second and happier of these two alternatives. Here, so far as they can now be foreseen, are the peacetime possibilities of Atomic Energy.

We are honored to present as our foreword this thrilling message to young people, prepared exclusively for *Scholastic Magazines* by Hon. David E. Lilienthal, Chairman of the United States Atomic Energy Commission.

Our cover design, drawn by staff artist Charles Beck, is a symbolic representation of the constructive uses of nuclear fission. In power production, engineering and transportation, medicine, and agriculture lie "miracles ahead" hidden in the transforming power of the atom. THE EDITORS

WE Americans have a high regard for speed. We enjoy fast motor cars. We are thrilled when another hour or two is cut from the transcontinental air flight time. Boldly we push against the sonic speed barrier beyond which we can only guess what will occur. In industry, America's unique mass production techniques have provided more and ever more goods for daily living.

The development of atomic energy represents one of our latest and most important speed records. In five years American science, engineering and production transformed scientific theory into a huge industry — an industry with untold possibilities for good or for ill. It can produce weapons of horrible effect; it can also produce better understanding of our world, curing of disease, more power for our homes and factories, more useful metals and structural materials, more food for the hungry world.

But the very speed with which atomic energy came to be has caught us short. We lack trained men and women to fill the new jobs that will come when America develops the possibilities of this new force. Already the laboratories and the production plants of the national atomic energy program feel the pinch. The United States Atomic Energy Commission has just announced two fellowship training programs — one for qualified men and women who seek to devote themselves to careers in the medical and biological aspects of atomic energy; a second for training those who wish to work in the physical sciences related to atomic energy.

The investment in the atomic energy project has been large — almost two and a half billion dollars. Yet it may be repaid, or more than repaid, by the benefits to agriculture and to increased world food supply alone. Engineers are excited about the changes which occur in metals given atomic treatment, and they are learning for the first time about the properties of many little known metals. These are a few among the many possible uses of atomic energy in the service of man. They suggest new industries and new professions for young people now at the door of their life careers.

Indeed, for the young men and women now in our high schools and colleges, particularly for those interested in science and technical fields, the future holds exciting and useful work opportunities. Tomorrow's leaders in the application of atomic energy to medicine, biology, physics, metallurgy, agriculture and the rest, are being trained today. To each of you reading this who are interested in this job ahead — this *big* job ahead — let me suggest a talk with your high school vocational guidance counselor. If your bent and your capacity fit you for a career in these fields, you can do your generation and future generations a real service by starting now to enter upon it.

David E. Lilienthal

Chairman, United States Atomic Energy Commission

How Footwork does it...

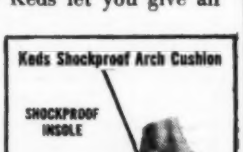
• *In broad jumping, take off on the most comfortable foot, hitting the board hard with all you've got!*

• *Take-off foot comes up and back—thrust other foot ahead and up, bringing leg high.*

• *Now bring rear foot forward so that both feet are ahead, together when you land.*

Help yourself along, in all sports, to the footwork of Champions by wearing Keds—the Shoe of Champions.

Keds let your feet move with free and easy action—help speed and stamina. Your Keds let you give all you've got!



U. S. Keds Handbook of Sports & Games—Free at your Keds Store.

CHAMPION

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Say What You Please!

. . . and that's what we mean! This letters column, a regular feature in all editions of *Scholastic Magazines*, is open to opinion on any subject and criticism of any kind, brickbats or orchids. We want to know *what's on your mind*. Other readers do, too. Address Letters Editor, Scholastic Magazines, 220 East 42nd St., New York 17, N. Y. — *The Editors.*

Dear Editor:

Your sports editor stated that Marie G. Boyd, of Central High, Lonaconing, Md., scored 156 points in a basketball game against Ursuline Academy in 1925 (Mar. 8 issue). Some of my classmates think this is impossible. Can you give us any further information?

Eleanor Houser
Indiana (Pa.) H.S.

This feat is listed in the *All-Sports Record Book*, and it isn't impossible. In the old girls' game, the court was divided into three sections (forwards, centers, and guards). Only the forwards were permitted to shoot, and none of the other players could enter the forwards' court. Thus, a good, tall girl, playing against an inferior opponent, could "roll up a million."—*Ed.*

Dear Editor:

I am a Chinese youth, age 20 years, and I have enjoyed immensely your magazine which I chanced upon while opening a bale of old American papers.

I earnestly hope that you will kindly publish in your esteemed magazine my desire to correspond with American youth; for, in this way only, can I get to know more of your wonderful nation, your way of living, and your very democratic spirit.

Perhaps, my would-be pen-pals would like to learn something about me. I have passed the London Matriculation and hope to enter a university soon. My hobbies are reading American, British, and Chinese literature; collecting stamps—a bit below the enthusiastic level; writing; and photography.

Lee Kok Liang
152 MacAlister Road
Penang, Malaya

Dear Editor:

Slim Syntax's columns (in the English editions) have straightened me out on many points of grammar. I have no trouble remembering the trouble-makers when I think of Slim's clever answers.

May Chew
San Diego, Calif.

Senior Scholastic

A National Magazine for Senior High School Classrooms Published Weekly During the School Year

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ADDING UP THE NEWS

THE IMPORTANT TRENDS IN A WEEK OF HISTORY

EUROPE

• ITALY. In the capitals of the world, when people speak of "the coming elections," they don't mean the U. S. Presidential contest. They have in mind the crucial national elections in Italy which are to be held on April 18.

Why is the Italian election so important? Because on its outcome depends the future not only of Italy but, possibly, of the entire European continent. If the Communists win in Italy, Russia (a) gains virtual control of the Mediterranean; (b) secures a strong foothold in western Europe; and (c) may undermine the entire European Recovery Program.

The last general elections were held in June 1946, for the 556 members of the National Assembly. The resulting party line-up was as follows: Christian Democrats (a middle - of - the - road party), 207; Socialists, 115; Communists 104; Democratic Union, 41; Common Man (a new party often accused of pro-Fascism), 30; others, 58.

Togliatti vs. de Gasperi

The Communists are commanded by the Moscow-trained, 54-year-old Palmiro Togliatti. The present Italian government is headed by Premier Alcide de Gasperi, a Christian Democrat.

In February 1947, about 40 of the 115 Socialists seceded from the Socialist party and formed a new group, the Socialist workers party. They are pro-democratic and anti-Communist. Their leader is Deputy Premier Giuseppe Saragat. The left-wing Socialists, led by Pietro Nenni, are completely dominated by the Communists.

The Communists, supported indirectly by Russia, are going all out to persuade the Italian people to vote Red.

The chief "trump card" in the hands of the democratic parties is the European Recovery Program. But the Communists have been telling the Italian people that American aid under the ERP would be continued even if the Reds gain control of the government in Italy. Because, they explained, the United States needs to build up European markets for its goods.

To counter this propaganda, Secretary of State George Marshall issued a statement declaring that if the Communists came into power the United States "would have to conclude that Italy had removed itself from the benefits of the European Recovery Program."

The Italian Communists were put on the spot by a surprise diplomatic move by the western Allies. The United States, Britain, and France proposed to Russia to revise the Italian peace treaty and return Trieste to Italy.

This important port and shipbuilding center in the northern end of the Adriatic Sea belonged to Italy before the war but it is a natural outlet for western Yugoslavia. In the peace treaty, Trieste and its environs (area: 430 sq. mi.; pop.: 330,000) was made a free territory to be administered by the U. N. (*see map*). It is now occupied by U. S., British, and Yugoslav troops.

The proposal was hailed enthusiastically by the de Gasperi government. There were joyful demonstrations by the Italian people. Meanwhile, the pro-Soviet Yugoslav government offered to give up any claims to Trieste in exchange for the Italian city of Gorizia, farther north. Italy had previously rejected this. The Communists in Italy find themselves sitting between two fires. They dare not come out against the Trieste proposal nor do they dare oppose Russia.

• THE U. S. ARMY will remain in control of the American occupation zone in Germany indefinitely.

This decision reverses the previous plan to transfer the administration of the zone to the State Department on July 1. Gen. Lucius D. Clay, who was to retire this year, will continue to be Military Governor and commander of U. S. forces in Europe.

Map by Eva Mizerek

Area in black marks Free Territory of Trieste (see story on this page).

NATIONAL DEFENSE

• A STEPPED-UP PROGRAM for national defense was spelled out before Congress by Secretary of Defense James Forrestal. The program follows President Truman's recent recommendations to Congress (*see April 5 issue*).

The armed forces will need, according to Forrestal, an additional three billion dollars this year, over the present estimate of eleven billion dollars. the program calls for:

1. An increase of 349,500 men to bring our armed forces to 1,734,000 immediately. This increase would come from a revival of selective service, to yield 220,000 men, as well as from additional voluntary enlistments. Selective service would be limited to single men between the ages of 19 and 25.

2. Universal military training. In full operation, UMT would train 850,000 eighteen-year olds yearly.

Congress has been lukewarm on UMT, but action on a temporary draft and other measures to strengthen national defense is believed likely.

CONGRESS AT WORK

• SEVEN MILLION TAXPAYERS will have to pay no income tax next year. That is one of the principal effects of the tax reduction bill passed in Congress by overwhelming vote. Nearly all Republicans and a wide majority of Democrats voted for the bill. The vote was 78-11 in the Senate, and 289-67 in the House.

The measure reduces income tax payments to the U. S. Treasury by $4,800,000,000 in 1948. Every taxpayer benefits — by reductions of from 13 per cent (in lower income groups) to five per cent (in the highest income groups).

Husbands and wives may now "split" their income for tax purposes, as is now done in the nation's 13 "community property" states. This provision will mean further reductions for married couples.

Congress passed the tax bill in the face of almost certain increased Federal expenditures for national defense (*see page* 5). However, many Congressional leaders expressed the belief that such additional expenditures can be made safely regardless of the reduction in revenue caused by lower taxes.

ADDING UP THE NEWS

The voting margin in Senate and House was more than enough to override a Presidential veto. President Truman has twice before successfully vetoed tax reduction bills.

U. S. AND THE WORLD

• A CODE OF FAIR PLAY in international trade was signed by representatives of 53 countries. It was the result of four months and four days of debate at the U. N. Conference on Trade and Employment in Havana.

The adopted document is the Charter of the proposed International Trade Organization (ITO). Its aims are to: (a) expand world trade; (b) encourage new industries in undeveloped countries; (c) reduce tariffs and other trade barriers; and (d) eliminate unfair practices in international trade.

Delegates of 53 of the 56 participating countries signed the proposed charter. Argentina, Poland, and Turkey did not sign. Russia refused to attend the conference. The signatory nations handle more than nine-tenths of the world's international trade.

The ITO does not become effective as a specialized agency of the U. N. until 20 countries have ratified the charter. In the U. S., ratification must come from the Senate or a joint Congressional resolution.

IN THE 48 STATES

• WANT A RADIO STATION? All you need is $6 worth of parts, a little ingenuity in putting them together — and a Federal license.

A "radio station" that weighs just three ounces and straps on your arm like a wrist-watch was demonstrated last month for the Institute of Radio Engineers. This tiny marvel of electronics has a microphone the size of a 25-cent piece, and can send over a distance of several hundred feet.

There's a miniature receiving set to match. It weighs half a pound, and you can build it from parts costing $20.

Here are some other wonders unveiled at the radio engineers' convention:

A *walkie-talkie* that fits in your pocket, costs $30 to $40, and sends and receives over distances up to 10 miles.

Two-ear radio; a new type of receiving set that overcomes interference and distortion and provides more natural sound quality. The sound travels over two separate channels.

Univac, a new calculating machine that handles decimals, uses the alphabet, and "reads" simple writing.

Reflected power, a new method of communication by shooting a wave of high-frequency electricity at a distant target.

• THE FREEDOM TRAIN, carrying precious documents of U. S. history, completes its tour of the Pacific Coast this month, and heads eastward. Here is the train's revised schedule:

Spokane, Wash., Apr. 13; Coeur d'Alene, Idaho, Apr. 14.

Montana — Missoula, Apr. 15; Butte, Apr. 16; Helena, Apr. 17; Great Falls, Apr. 18; Billings, Apr. 20.

Wyoming — Sheridan, Apr. 21; Casper, May 20; Cheyenne, May 21.

South Dakota — Rapid City, Apr. 22; Pierre, Apr. 23; Aberdeen, Apr. 24; Watertown, May 11; Sioux Falls, May 12.

North Dakota — Bismarck, Apr. 25; Minot, Apr. 27; Jamestown, Apr. 28; Fargo, Apr. 29; Grand Forks, Apr. 30.

Minnesota — Duluth, May 1; St. Paul, May 3-4; Minneapolis, May 5-6; Brainerd, May 7; St. Cloud, May 8; Willmar, May 9.

Superior, Wisconsin, May 2. Sioux City, Iowa, May 3. (Other stops in Wisconsin and Iowa in June.)

Nebraska — Omaha, May 14-15; Lincoln, May 16; Grand Island, May 17; Alliance, May 19.

Colorado — Denver, May 22-23; Colorado Springs, May 24; Pueblo, May 25; Trinidad, May 26.

THE MIDDLE EAST

• MAY 16 may be independence day for a Palestine Jewish state. A "provisional Jewish government" will begin operations promptly after Britain gives up her mandate on May 15. A 32-man Jewish administration body has already been selected.

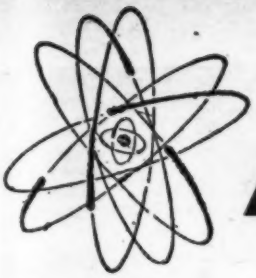
So declared Vaad Leumi (Jewish National Council) and the Jewish Agency for Palestine.

Both Jewish and Arab spokesmen expressed opposition to the U. S. proposal for a temporary U. N. trusteeship over Palestine. President Truman, in explaining the U. S. proposal, said that it did not completely bar the way to eventual partition of Palestine into Jewish and Arab states.

The U. S. has urged a special session of the U. N. General Assembly to reconsider the Assembly's partition plan, adopted last November. It would take a two-thirds majority of the Assembly to make any change in the original partition plan.

PICTURE STORY OF THE WEEK

"HELLO WORLD, Let's Get Together!" is the theme of this year's Camp Fire Girls' national birthday project. Part of their project is the exchanging of ideas and customs with teen-agers in foreign countries. Our photo shows two Camp Fire Girls packing the makings of a typical American party for overseas youngsters.



Atoms and Isotopes

EVERYTHING in the world of nature — including you and what you eat, wear, handle, and ride on — is made of atoms. There are 96 elements (hydrogen, oxygen, carbon, lead, gold, uranium, etc.). Each of these 96 basic substances is made up of a certain kind of atoms. They are the building blocks of matter, and they can be put together in innumerable different combinations.

Atoms are unbelievably small. Nobody can see them, even with the most powerful microscopes. But with the aid of a "cloud chamber," a box containing moist air or gas, scientists can follow their trails and even photograph them. A speck of uranium as big as the dot over this "i" would contain 2,550,000,000,000,000 (two thousand, five hundred fifty quadrillion) atoms.

Small as atoms are, we now know that atoms themselves are built up of much smaller particles. There are three basic particles — electrons, protons, and neutrons — and all kinds of atoms are made of these same particles. Electrons always have a negative electrical charge; protons have a positive charge; and neutrons have no charge at all (*see Chart 1*).

An atom is a good deal like the solar system, with the planets whirling around the sun. At the center is a nucleus, consisting of a somewhat solider cluster of protons and neutrons, closely bound together. Around the outside whirl the electrons in fixed orbits, some circular, some elliptical. They are held in their orbits by the electrical attraction of the protons in the nucleus. There is one proton for each electron.

Actually, the electrons are so far from the nucleus that the atom is mostly empty space. If the nucleus were the size of a baseball, the electrons would be half a mile away. Even in the densest matter, like hard steel, the nuclei are far apart from each other.

Atoms of the various elements can be identified in two ways — by their atomic numbers and their atomic weights. The atomic number is always the same as the number of protons in the nucleus. Each element has a different atomic number, ranging from 1 for hydrogen to 96 for curium, in the "periodic table of the elements."

Each element also has an atomic weight, which is measured by the number of units in the nucleus of its atom. It is the total of the number of protons and the number of neutrons. In an atom of helium, for example (*see Chart 2*), there are two protons and two neutrons. Therefore the atomic number of helium is 2, and its atomic weight is 4.

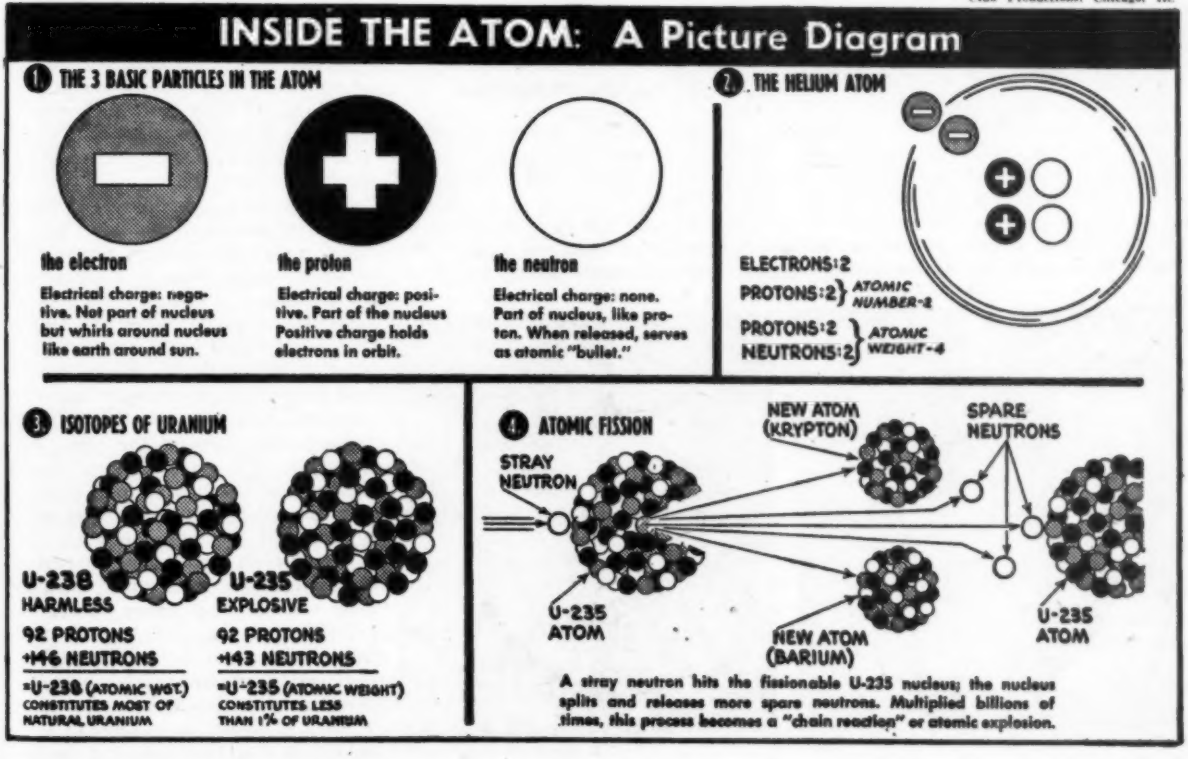
It is now known that the weights of various atoms of the same element may vary because of differences in the number of neutrons in the nucleus. All the atoms in any element have the same number of protons and they all react the same chemically, but the number of neutrons may vary, and that changes the weight.

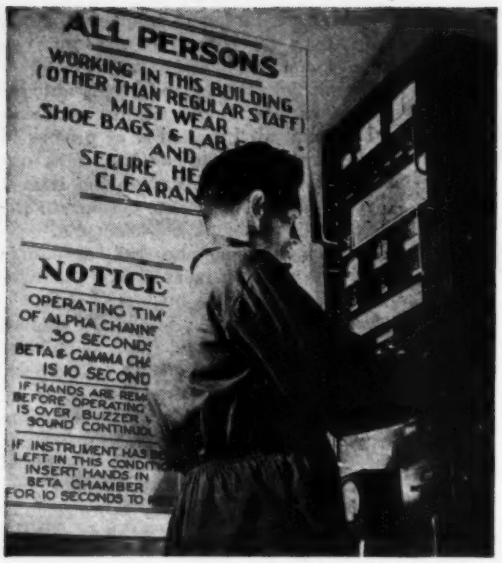
A form of an element that differs in atomic weight from other forms is called an "isotope" of that element. Many elements have isotopes. For example, an isotope of hydrogen, called deuterium, or heavy hydrogen, has an

(*Concluded on page 12*)

Charts adapted from "The Atomic Bomb," copyright 1946 by Lewellen's Club Productions, Chicago, Ill.

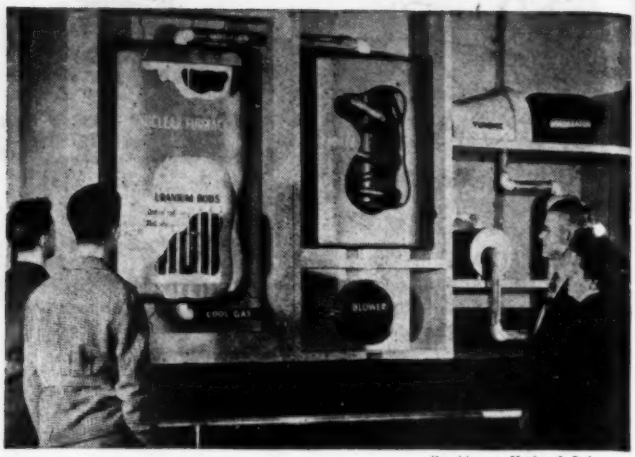
INSIDE THE ATOM: A Picture Diagram


1. THE 3 BASIC PARTICLES IN THE ATOM
the electron
Electrical charge: negative. Not part of nucleus but whirls around nucleus like earth around sun.
the proton
Electrical charge: positive. Part of the nucleus Positive charge holds electrons in orbit.
the neutron
Electrical charge: none. Part of nucleus, like proton. When released, serves as atomic "bullet."
2. THE HELIUM ATOM
ELECTRONS: 2
PROTONS: 2 } ATOMIC NUMBER-2
PROTONS: 2
NEUTRONS: 2 } ATOMIC WEIGHT-4
3. ISOTOPES OF URANIUM
U-238
HARMLESS
92 PROTONS
+146 NEUTRONS
=U-238 (ATOMIC WGT.) CONSTITUTES MOST OF NATURAL URANIUM
U-235
EXPLOSIVE
92 PROTONS
+143 NEUTRONS
=U-235 (ATOMIC WEIGHT) CONSTITUTES LESS THAN 1% OF URANIUM
4. ATOMIC FISSION
STRAY NEUTRON
NEW ATOM (KRYPTON)
SPARE NEUTRONS
U-235 ATOM
NEW ATOM (BARIUM)
U-235 ATOM
A stray neutron hits the fissionable U-235 nucleus; the nucleus splits and releases more spare neutrons. Multiplied billions of times, this process becomes a "chain reaction" or atomic explosion.



Canadian National Film Board

Canadian worker checks hands for beta and gamma ray contamination.



Brookhaven National Laboratory

Model shows how atomic pile heat may produce electricity.

Atomic Energy in

ATOMIC ENERGY has a split personality. It is both a killer and a healer, a destroyer and a builder. Which facet shall dominate depends on how we bring up this wonder-child of science. It is up-to Man whether Atomic Energy is to become his servant or his doom. In this article we shall discuss the future of the atom, in relation to power and fuel, agriculture, engineering, and medicine. These are the four fields in which the most promising research has been done to date.

1. FUEL AND POWER

Theoretically it is perfectly possible to develop atomic energy as a source of power. How soon will it become a practicable reality?

According to Dr. Lyle B. Borst, of the Brookhaven National Laboratory, conversion of atomic energy into electric power for some purposes can be confidently expected within the next twenty years. Atomic-powered ocean-going vessels, for example, may be developed by that time. Such portable atomic engines could only be carried on very large and stable vehicles. At present engineers do not know how to build a safe atomic engine weighing less than 20 tons. Therefore atomic-powered automobiles and planes are not to be expected for a long time.

Much closer to realization is the use of stationary atomic plants for generating electricity from heat. Engineers believe this is feasible within five or ten years, though there are tremendous difficulties to overcome.

The general principles of atomic power production are now known. They require the creation of controlled chain reactions, using small quantities of uranium or plutonium, in a heavy blocklike structure called an atomic pile. Some liquid metal, like sodium, is circulated through the atomic furnace and is raised to an extremely high temperature. This hot metal is cooled by passing water around the pipes containing it. The water in turn absorbs the heat and becomes steam. The steam then is used to run an ordinary steam turbine and generate electricity.

To establish steam generating plants of sufficient size to compete economically with existing power plants, operated by burning coal, fuel oil, or by falling water, involves many difficult engineering problems. The best estimate so far, submitted by Dr. R. C. Tolman, of California Institute of Technology, is that electricity can be generated from uranium at a cost of 0.8 cents per kilowatt hour. This is about

Memorial Hospital, NYC

Doctor traces course of iodine isotope in thyroid of cancer patient.

Acme

Radioactivity of coal-made gasoline sample is measured by Geiger count.

U. S. Department of Agriculture

From behind lead shield, chemists place radioactive iodine in case.

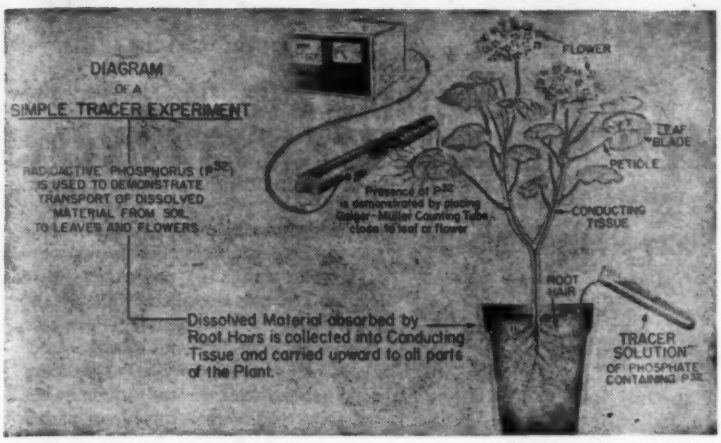


DIAGRAM
OF A
SIMPLE TRACER EXPERIMENT
RADIOACTIVE PHOSPHORUS (P32) IS USED TO DEMONSTRATE TRANSPORT OF DISSOLVED MATERIAL FROM SOIL TO LEAVES AND FLOWERS
Presence of P32 is demonstrated by placing Geiger-Müller Counting Tube close to leaf or flower
Dissolved Material absorbed by Root Hairs is collected into Conducting Tissue and carried upward to all parts of the Plant.
FLOWER
LEAF BLADE
PETIOLE
CONDUCTING TISSUE
ROOT HAIR
TRACER SOLUTION OF PHOSPHATE CONTAINING P32

Brookhaven National Laboratory

Effect of radioactive phosphorus is traced in plant research.

OVERALLS

30 per cent higher than the cost of coal-generated power in areas where coal is plentiful. Many engineers are convinced, however, that this figure can be greatly reduced in time.

One great advantage is that an atomic power plant can be set up almost anywhere. Fuel from fissionable materials weighs so little in comparison with coal (pounds instead of tons) that transportation would be simple.

The supplies of atomic fuel are adequate. New sources of uranium are being found daily. Thorium, the other chief source, though requiring more costly processes of reduction, is three times as plentiful as uranium.

The safety problem is a serious one. The pile must be built of materials capable of withstanding the high temperatures generated. Moreover, dangerous radiations are created within the pile. These rays are deadly to all living things within their range. Massive lead and concrete shields at least six feet thick must be built around a pile.

The U. S. Atomic Energy Commission has at present nine atomic piles in operation. None of them, however, is designed primarily to generate power. A new experimental pile to aid research is now under construction at the Brookhaven National Laboratory, Long Island. It is expected to produce some power as a by-product, but not over 2,000 kilowatts.

The most extensive project for atomic power production now under way is the new Knolls Laboratory of the Atomic Energy Commission, under construction near Schenectady, New York, to be operated by the General Electric Company. G. E. has bet heavily on the future of atomic power.

2. AGRICULTURE

American scientists are using atomic materials to help them learn more about plant and animal life. Their findings may prove very important to our national food supply.

As in the case of fuel and power, there have been exaggerated reports about the benefits of atomic energy in the field of agriculture. For example, a rumor was widely circulated that the Japanese areas which were subjected to the atomic bombings have produced harvests that doubled or tripled the previous yields. A careful check proved that nothing of the sort happened.

So far there is no direct evidence that atomic energy — by itself — will increase the rate or amount of plant growth. But atomic energy is indirectly helping scientists to find out more about plant life and agricultural problems. The most useful tools of investigation in the biological field are the so-called "tracer atoms" (radioactive isotopes of ordinary elements).

The method of using "tracer atoms" is basically simple. It consists of adding some of the radioactive isotopes of a substance like phosphorus or carbon or sulphur to a supply of the normal element. This compounded substance may be injected into the soil around the roots, absorbed into the plant, and carried to the farthest leaves and blossoms. It may even be transmitted to an animal that consumes the vegetation as fodder. By using Geiger counters or other detectors, the "tracers" can always be located in a growing plant or an animal body.

Already radioactive phosphorus, carbon, and many other isotopes are being used by scientists to determine at what stage of growth a plant needs fertilizer, for the best results. These experiments may lead to improved fertilizers and methods of using them.

Tracer atoms may also help to determine what chemical deficiencies contribute to plant diseases and how to correct them. Better insecticides and weed-killers may be developed. Studies are also being conducted with isotopes on how to increase and improve meat and dairy production.

On March 20, the Atomic Energy Commission and the Department of Agriculture announced a joint study of the influence of radioactive materials on the growth of crop plants. The Commission will pay for the experiments and provide the necessary equipment. This investigation is designed to answer a number of questions on the relationship between plant growth and radioactivity. The study may show farmers how to boost their crop yields and how to develop hardier varieties.

3. INDUSTRY

In engineering, the atom is already at work. When radioactive isotopes were made available by the U. S. Atomic Energy Commission about a year and a half ago, among the first to apply for them was American industry. They have proved their worth in the petroleum, metallurgical, mining, chemical engineering, electrical, synthetic rubber, and drug industries.

Friction has been the subject of considerable study. Isotopes are used to measure the degree of wear in moving parts like ball bearings and sliding metal surfaces of pistons and piston walls. Tests have been made with various alloys to produce more durable bearings and pistons. Isotopes can detect the amount of wear down to one hundred billionth of an ounce of metal.

Also in the field of metallurgy, radioisotopes are being employed similarly to X-rays to look for defects in large metal parts. Tracers may be used to study the aging of metals, removal of impurities from steel, and in solving numerous other metallurgical problems.

Petroleum companies, especially Gulf Oil, have used radioactivity to probe the oil-producing capacity of exploratory drillings and to re-examine old wells for useful oil reserves. Here radioactive materials are incorporated into the drilling mud and forced into the formation. A Geiger counter then shows the degree of reflection from the surrounding earth, which can be used to measure the oil and water content of the ground. The underground flow of gas and liquids can be traced.

(*Concluded on page* 11)

AMERICA in World Affairs

The "New" Immigration

By Henry Steele Commager

Professor of History, Columbia University

BY all odds immigration has been the most important, and the most continuous, connection between the United States and the rest of the world. It is a connection too little understood, too often neglected.

Immigration has been an unending story in American history. All Americans, except the Indians, are immigrants or the descendants of immigrants. The Spaniards, the French, the Dutch, and the English, who came over the ocean in the sixteenth and seventeenth centuries, were immigrants, and so were the millions who followed them.

Before the Civil War, most immigrants had come from the countries of northern Europe – from Britain, France, Germany, and Scandinavia (*see Jan. 19 issue*). These immigrants brought with them the cultural heritages of their countries – heritages on the whole much the same in the whole northern group. They had mixed easily enough in the New World.

One other large group of immigrants had come, too, in this early period. They are the Negroes, whom we do not ordinarily think of as immigrants at all. The importation of Negroes was forbidden in 1810. In the following decades, only a few came in, illegally.

Immigration from Ireland and Germany continued without much change for 20 years after the Civil War. Then, late in the 1880s and in the 1890s, there came a shift. Immigration began to flow strongly from the countries of southern and eastern Europe. We call this the "new" immigration.

A few statistics are in order. In the decade of the 1880s about 3,750,000 immigrants came from northern and western Europe, and less than 1,000,000 from the rest of Europe.

But in the decade of the 1890s the immigrants from southern and eastern Europe outnumbered those from the "old" countries. In the first ten years of the new century, the figures were 6,250,000 for southern and eastern Europe and less than 2,000,000 from northern and western Europe.

There were important differences between these "old" and "new" immigrations. The important differences were not in the character or the quality of the people themselves, but in their circumstances and their relationship to the American society and economy.

In the first place, most of the new immigration was Catholic or Jewish rather than Protestant. In the second place, the new immigrants tended to concentrate in the cities rather than to settle in farms or villages. In the third place, most of them went into industry – usually as unskilled workers – rather than into farming or skilled crafts.

All this meant that the new immigration changed the religious, the social, and the economic conditions in America. The Roman Catholic Church increased from one of the smaller churches to the largest single church in America. The vast influx of newcomers to the cities created the most difficult problems of city government – education, housing, sanitation, and law. The impact of unskilled workers on the American labor force created a whole series of labor problems – problems of union policy, of craft versus industrial unionism, and of labor-union democracy.

But most important of all was that new immigrants vastly increased the connections between the United States and other peoples of the world. For generations, every newcomer to America had brought with him his own ways of life and thought, his songs, stories, faith, and customs. He had been, too, a propaganda agent, for almost all of them found great satisfaction in their new life. He wrote back to the Old World inviting family and friends to follow him.

Added Variety for America

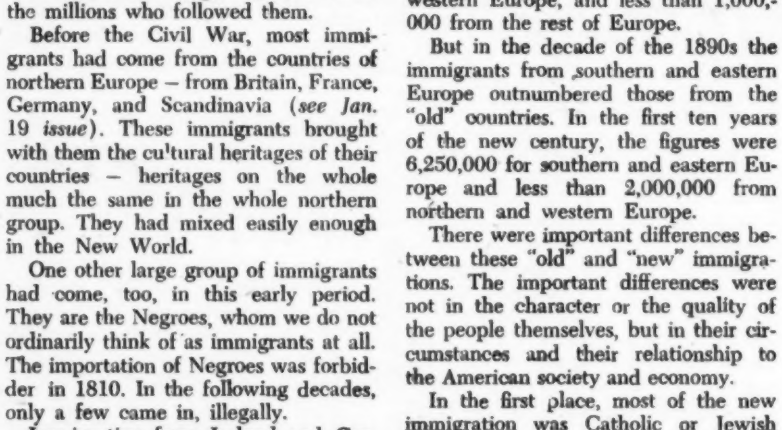
The new immigrants did not differ from the old in these respects. They gave new color to American life, added to the variety of American character, language, habits, and customs. In many instances they made important individual contributions to science, art, music, and literature.

They, too, spread the gospel of America throughout the Old World, attracting others here, helping to build up the great farming and labor force which has made America prosperous.

A word should be said about immigrants from countries other than those of Europe. We have already mentioned the Negroes, brought over from Africa, who became part of American civilization, first as slaves and then as free men.

There were contributions, too, from the Orient – from China in the 1850s, 1860s, and especially the 1870s, when over 100,000 came. Immigrants came from Japan in the early 1900s, and from Asiatic Turkey.

There have been increasing numbers from our neighbors to the north and the south. More than 1,500,000 Canadians, of French and English descent, have crossed the border into the United States. About 1,000,000 came up from Mexico to work in the ranches and beet fields of the Southwest.



Senior Scholastic chart from U. S. Government figures

How 18,000,000 immigrants to the United States (1891-1920) were divided. Compare this chart with the ones in the October 6 and January 19 issues.

Atomic Energy in Overalls

(*Concluded from page* 9)

Among the industrial corporations which have had special contracts for projects at Oak Ridge are (1) Monsanto Chemical Company, which is building a "hot lab" for chemical work with dangerously radioactive materials; (2) Fairchild Engine and Airplane Corporation, which is investigating the applications of nuclear energy to aircraft propulsion, including turbines, jets, and rocket devices; (3) Union Carbide and Carbon Corporation, which operates plants for separating U-235 from U-238.

No less important is the use being made of isotopes to improve health and safety conditions in industry. In industrial hygiene, dusts and vapors from mechanical operations in factories can be examined minutely and measurements made of their infiltration into a worker's lungs or bloodstream. This may lead to the development of special safety devices for hazardous trades.

4. MEDICINE AND HEALTH

Many people are alive today who would be dead were it not for the application of atomic science to medicine.

Here, too, the eager-beaver isotope has made brilliant contributions to the study and advancement of the art and science of healing. Utilizing these by-products, medical scientists are at present directing their research toward these specific goals:

1. To increase our knowledge of physiology in general;

2. To find better ways of diagnosis (telling what disease a person has);

3. To find out how diseases may be treated by the use of atomic materials.

The good old isotopes are making it possible for medical researchers to get inside the human body—figuratively speaking—and "see" what happens there to essential substances, such as carbon, iodine, and sugar. They can study and observe the actions within the body of vitamins, bacteria, blood cells, acids, fats, proteins, drugs, poisons, and many other substances.

By studying from *inside* the body instead of from symptoms only, scientists are learning new facts about heart disease and cancer. (It should be stressed that no cure for cancer has yet been discovered, but a good deal has been learned about this mass killer through the use of atomic materials.)

True medical scientists object to sensationalism. They refuse to make predictions about "sure cures" with atomic materials. Every new discovery is double-checked before it is made public.

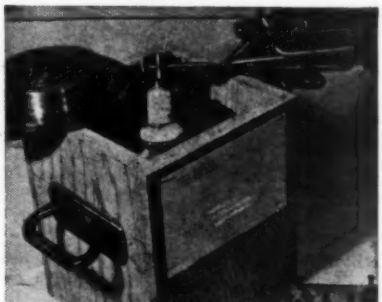
Radioactive iodine has definitely proved helpful in the treatment of some types of goitre and thyroid tumors. The thyroid gland has an affinity (attraction) for iodine. Thus radioactive iodine given to a patient will concentrate in the thyroid, without affecting other parts of the body. In this manner, certain thyroid disorders (such as hyperthyroidism) can be controlled, particularly in cases where surgery is too great a risk. Moreover, some control of thyroid cancer may also be gained through radioiodine.

During the war, experiments with isotopes helped develop the blood-transfusion program of our Armed Forces. These tests resulted in determining the best means of preserving and shipping red blood cells for use in transfusions.

Today, radioactive isotopes do most of the work of radium (whose cost is often prohibitive) and do many things which radium itself cannot do.

To cite just one actual example of how radioactive atoms are serving medical science, let us take the case of Mr. X. As a result of an accident, his leg was crushed and a gangrenous infection set in. Amputation was imperative. But the problem that confronted the surgeon was to decide whether to cut off Mr. X's leg above or below the knee. If the knee joint could be saved, it would be easier for Mr. X to learn to walk again. On the other hand, if the knee was infected it would lead only to another operation.

Here is where Dr. Isotope came in. A solution of radioactive sodium was injected into the patient's arm. A Geiger counter was held near the injured kneecap. The instrument registered promptly. It showed that the radioactive salt had been carried from the arm into the knee joint. The circulation up to that point was unimpaired, and the knee could be saved.



Canadian National Film Board

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Senior Scholastic Citizenship Quiz

Questions are based on articles in this issue. Perfect score is 100. Answers in Teacher Edition.

The Atomic Age

What wonders will the peacetime use of atomic energy unfold? In front of each of the following, write *L* if the prediction is now true or is likely to come true. Write *N* if the prediction is *not* likely to be fulfilled. Each counts 2. Total 22.

___1. Your family auto will be powered by atomic energy within ten years.

___2. Electricity will be generated by harnessing atomic power.

___3. Atomic energy will be used to study plant and animal growth.

___4. Your home will be heated by a tiny furnace using atomic energy.

___5. Atomic energy will be used—as X-rays are now—to look for defects in large metal parts for manufactured products.

___6. Atomic energy will be used to learn new things about cancer and heart disease.

___7. Radioactive atomic energy will be used in cities to clear the air of smoke and dirt.

___8. Atomic energy will be used for fertilizer to increase crop production 500 per cent.

___9. Atomic energy will be used to discover new oil fields.

___10. Isotopes will be used to examine conditions inside the human body.

___11. Use of radioactive material will be safe enough for any untrained person to use, even without protective shields and clothing.

My score_____

Who Am I?

In each of the following, write in the name of the person described. Each count 3. Total 6.

_____1. I am chairman of the Atomic Energy Commission.

_____2. I am chairman of the Joint Congressional Committee which supervises atomic energy legislation.

My score_____ (*Turn page*)

CITIZENSHIP QUIZ

continued from preceding page

Your Atomic Quotient

Complete each of the following with a word or short phrase. Each counts 4. Total 52.

1. _____, 2. _____ _____, 3. _____ are three of the six major divisions of the Atomic Energy Commission.

4. The 96 basic substances found in nature are known as the _____.

5. _____, 6. _____ _____, 7. _____ are the three basic particles which are found in every atom.

8-9. An atom may be identified by its atomic _____ and its atomic _____.

10. _____ is the name given to a form of an element which differs in atomic weight from other forms of the same element.

11. The present chief source of fissionable materials is _____.

12. An enclosed box filled with moist air or gas in which moving atomic particles leave cloudlike trails is called a _____.

13. The central core of particles in an atom, made up of protons and neutrons bound together, is the atom's _____.

My score_____

The "New" Immigration

In the following, underline the word or phrase which best answers the question. Each counts 5. Total 20.

1. In the decades following 1890, where did most immigrants to the United States come from? (a) northwestern Europe; (b) Africa and Asia; (c) southern and southeastern Europe.

2. What type of work did most of these "new" immigrants take up? (a) farming; (b) skilled and unskilled labor in cities; (c) professions and the arts.

3. About how many Canadians and Mexicans have migrated to the United States? (a) 25,000; (b) 250,000; (c) 2,500,000.

4. What was the general reaction of most immigrants after settling in the United States? (a) They found conditions the same as in their native land; (b) They encouraged their family and friends in Europe to join them; (c) They sent their children back to Europe.

My total score_____ My score_____

My name _____

CQ for issue of April 12, 1948

Atoms and Isotopes

(*Concluded from page 7*)

extra neutron in its nucleus. Some isotopes are stable and are found in a state of nature. But others, known as "radioactive," are constantly changing because they emit certain particles or rays. They can be produced by bombarding the original atom with other particles.

The most important of the radioactive elements, which is basic to all efforts to release atomic energy, is uranium. It has in its most abundant state 92 protons and 146 neutrons, giving it an atomic weight of 238. This constitutes over 99 per cent of natural uranium, a heavy, silvery metal, and is called U-238 (*Chart 3*). But the scientists discovered that an isotope of uranium, U-235, which has only 143 neutrons, can be produced by various separation processes. Its nucleus is capable of being split, or is "fissionable."

When an atom of U-235 is bombarded by a stray neutron, its nucleus splits – that is, its protons fly apart with great force – and forms smaller atoms of some other substance (*see Chart 4*). Two or three of the original neutrons are not needed in the new atoms, and they fly off as "neutron bullets" at 10,000 miles a second. If one of them happens to hit another U-235 nucleus, that also splits, freeing other neutrons to split other nuclei. This process, known as a "chain reaction," constitutes an atomic explosion, and is the basic process of the atomic bomb that was dropped on Hiroshima. A lump of U-235 will not explode unless it is large enough (something over two pounds) to make sure that the reaction is carried on automatically.

Many elements can be turned into radioactive isotopes by passing them through an atomic "pile," where they are subjected to bombardment by various particles. It is these radioactive isotopes, of which more than 100 different forms have now been produced at the Oak Ridge National Laboratory in Tennessee, that are the basis of most of the research being carried out in medicine, agriculture, industry, and other peace-time uses of atomic energy (*see pages 8-9*).

ATOMIC GLOSSARY

atom: the basic unit of all chemical elements, consisting of groups of smaller particles in rapid motion.

atomic number: a number identifying each element in the periodic table, representing the number of protons in the nucleus of its atoms.

atomic weight: the sum of the number of protons and neutrons in the nucleus of an atom of any element.

chain reaction: an automatic explosive process in the nucleus of certain atoms, by which neutrons are torn loose to hit and split a series of other atoms.

cloud chamber: an enclosed box or retort filled with moist air or gas in which moving atomic particles leave cloudlike trails.

cyclotron (*sī*-klō-trŏn): a machine in which atomic particles are whirled to very high speeds by electric action.

electron: one of the negative particles which revolve around the nucleus of an atom in fixed orbits.

element: one of the 96 recognized basic classes of matter which cannot be analyzed into other substances.

fissionable (*fish*-un-a-bul): an element capable of having its atomic nuclei split to release atomic energy.

Geiger counter (*gī*-ger): an instrument for detecting radioactive particles, consisting of a tube containing gas which conducts electric impulses with a clicking sound.

isotope (*ī*-sō-tōp): a form of an element whose atomic weight differs from that of the original element.

neutron: one of the two types of particles in the nucleus of an atom, carrying neither positive nor negative charges.

nuclear fission: the breakdown or splitting of the nucleus of certain atoms into nuclei of other elements, releasing atomic energy.

nucleus: the central core of particles in an atom, consisting of protons and neutrons bound together.

pile: an atomic furnace consisting of blocks of graphite and other substances into which rods of uranium can be inserted to produce nuclear fission.

plutonium: a fissionable element (atomic number 94) not found in nature but produced artificially from uranium, and capable of intense atomic explosions.

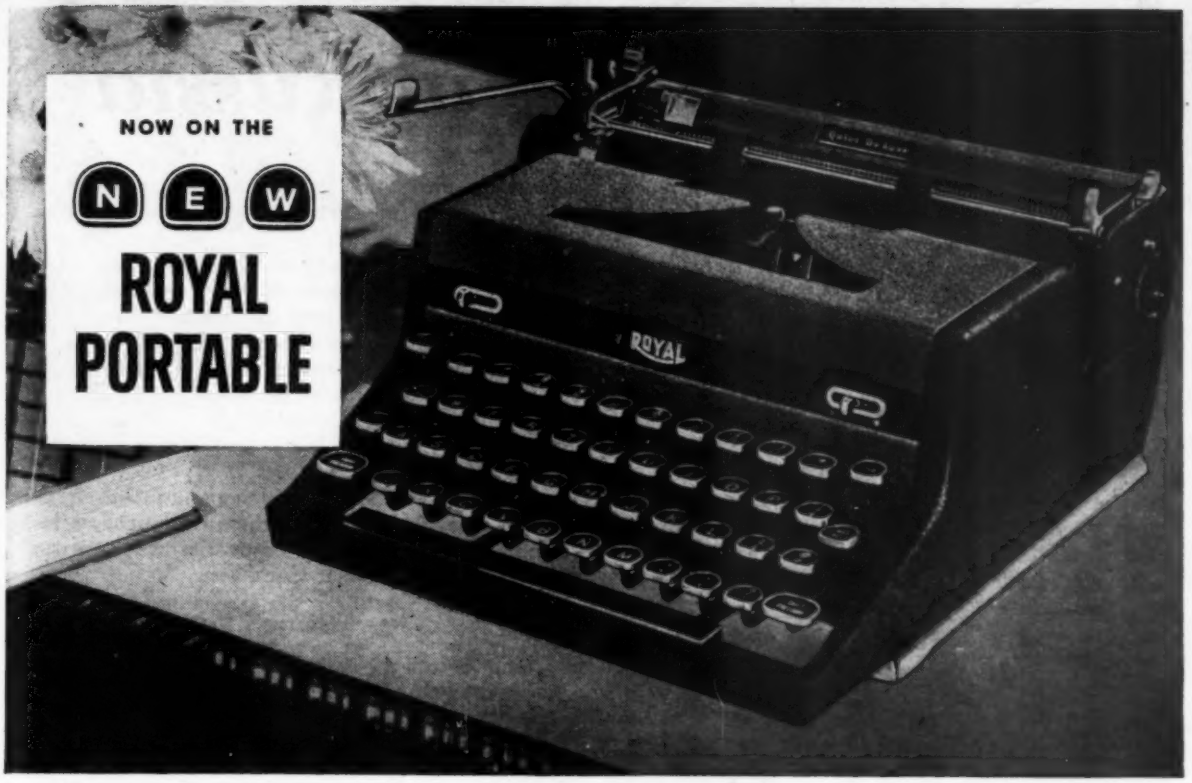
protons: the basic type of particles in the nucleus of an atom, always carrying a positive charge equal to the negative charges of the electrons.

radioactive: elements having the property of emitting particles or rays (often injurious to living matter) from the atomic nucleus, such as radium, uranium, thorium, etc.

thorium: a radioactive element (atomic number 90) capable of producing fissionable substances.

tracer: a radioactive isotope whose location can be detected by a Geiger counter.

uranium: a heavy white, radioactive metallic element (atomic number 92), whose main form (U-238) is stable, but whose isotope (U-235) is the principal source of atomic chain reactions.



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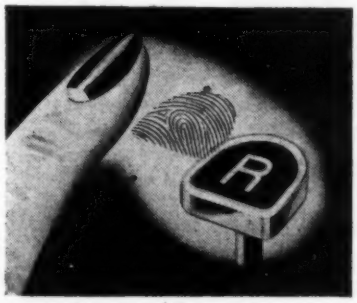

THE NEW ROYAL PORTABLE

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Young People in Russia

IVAN is cross this morning. He overslept. Unless he hustles, he'll be late for school. He'll have to get his own breakfast, because both his mother and father have already gone to work at the factory. They live in the big Russian industrial city of Kharkov.

He dresses in a hurry, bolts his breakfast, and runs down to meet Alex and Serge, his two best friends. The three always go to school together.

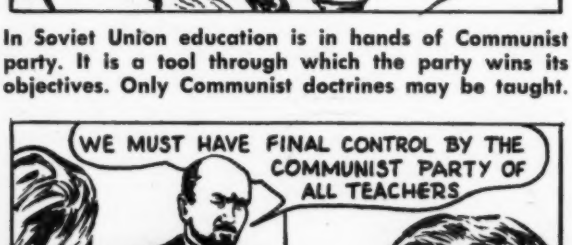
Ivan is twelve years old, and he knows what a great privilege it is to go to school. If he could remember big numbers, Ivan would tell you that in the days of the Czar (1914) there were between five and six million students in Russia. But now, under the Communist regime, there are (1939) more than twenty million students in all the schools.

Anyway, he is very glad he lives in a Communist country and not in a "capitalist" country. He is taught in school that in capitalist countries the workers are oppressed.

Ivan meets Serge and Alex, and the three go off to school. They study about the same subjects we study. Mathematics is just as hard in Russian as it is in English. But geography and all other subjects are studied from the Russian point of view. Ivan learns that Russia is the biggest country in the whole world, covering one sixth of the land surface. He studies the different regions of Russia, from the frigid arctic tundras to the warm tropical areas where cotton grows.

It is largely in history that Ivan and Alex and Serge are badly informed. What they are taught as history would sound very strange to us. Let us have a look at the kind of history that Ivan learns.

In Soviet Union education is in hands of Communist party. It is a tool through which the party wins its objectives. Only Communist doctrines may be taught.



All teachers are controlled by Communist party. They may give only approved instruction. Policy of getting teachers to toe Communist line was set up by Lenin.

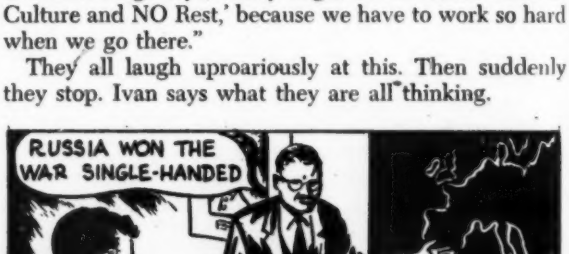
How History Is Distorted

Ivan and his classmates are taught that Russia won the war against Germany and Japan without help from any other country – practically single-handed.

The most important thing to be learned in a Russian school is how to be a good Communist. Ivan is taught that there is a great "capitalist" plot to destroy the Communist system in Russia, and his schoolmates must be ready to defend communism at all costs. Ivan learns to hate the capitalist countries that practice free enterprise. Since most of the world is capitalist, Ivan learns to hate most of the world.

After school, Ivan, with Alex and Serge, go over to the "Park of Culture and Rest." Serge, who has the keenest sense of humor, keeps his two friends laughing all the time. Serge says, "They ought to call them 'Parks of Culture and NO Rest,' because we have to work so hard when we go there."

They all laugh uproariously at this. Then suddenly they stop. Ivan says what they are all thinking.



Most important thing a student can learn at school is how to be a good Communist. Russian students are told that Soviet Union is most advanced country in world.

Students are taught to hate capitalist countries, and are told that American cities have only two kinds of houses—slums for the poor and mansions for the rich.

Students are strictly supervised at school, at home, on street. Teachers regulate out-of-school lives of pupils, control attendance at movies and the theater.

"A good Communist ought not to say that. It might sabotage the program. That would be bad."

Serge wriggles a little and then says, "That's right. But it just struck me funny."

They decide to forget it. Ivan feels very proud to have Serge for a friend. Serge comes from Turkestan, in the southern region of Russia. He is of Tartar birth. Ivan has been taught in school that in capitalist countries boys of different nationalities do not associate with each other.

Russia has strict laws against race prejudice. That is one reason some liberal people once had great hopes for the Russian system.

Ivan is also taught that American cities have only two kinds of houses – slums, not fit to live in, and mansions, where every luxury is provided. He is told that in the very center of New York people live in old boxes like dog-kennels and search in garbage cans for food. He learns that only the children of millionaires have good schools. The people of America, he is told, live in fear and misery.

Ivan's teachers believe everything they teach Ivan. For they can never buy a foreign newspaper or magazine in Russia. And they can buy foreign books only after they have been censored. Foreign motion pictures, too, are forbidden.

Ivan and Serge and Alex also belong to the Russian youth organizations. They were "Octobrists" until they were eight. Now they are "Red Pioneers." Later on they may join the League of Communist Youth.

"Good Servants" of the Communist Party

As Red Pioneers, they have camping and sports as our Boy Scouts do. They also have to work hard at scrap-collecting, road-building, and other tasks for the government. But they must also watch their parents and their families, to be sure none of them is an "enemy of the people." If they see any signs of anything they consider "counter-revolutionary," they must report it to their Communist leaders.

Ivan does not have to worry about his parents. His father and mother are both old revolutionaries. Ivan's

All students must join youth organizations. Here they have civic duties, are given anti-religious education, prepare by strenuous athletics for military service.

father has always said that communism was the key to happiness. He says that communism has done so much for him and his family that the least they can do is to be "good servants" of the Communist party. And that's what they are, "good servants."

Ivan and Serge and Alex see a great event happen today at the Park of Culture and Rest. A parachute jump is being held. But it is quickly forgotten when an American correspondent visits the park so that he can write about it in the American papers.

The boys stare and stare at the American. They are all thinking hard. It is Serge who speaks the thought they are all thinking. "Why, this American is a *person* just like us!"

No. 25 ALL OUT FOR DEMOCRACY

Text by Rosa Kohler Eichelberger
Pictures by Charles Beck

Army Signal Corps photo
Carroll L. Wilson

Young Man with *(Atomic)* Energy

THIRTY-SEVEN-YEAR-OLD Carroll Louis Wilson is a tall, lanky young man. His shoulders are slender. But, figuratively speaking, they must be very broad, for upon him rests the responsibility for the day-to-day operations of the United States Atomic Energy Commission.

The chart on the left tells the story. As AEC's General Manager, Wilson is in charge of the Commission's 45,000 workers, six principal divisions, and nine major atomic energy installations. Three moderate-sized cities – Los Alamos, N. M.; Hanford, Wash., and Oak Ridge, Tenn. – are owned by the Commission. For them, the AEC is employer, landlord, and policeman.

Sixty universities and colleges and 400 private industrial concerns have contracts with the AEC for-atomic energy research and development.

For all of these operations, Wilson is guided and directed by the five Atomic Energy Commissioners (*see names on chart*). These six men were appointed by President Truman in November, 1946. The Commissioners' terms expire on July 31, 1948, but they may be reappointed.

Atomic Energy's "First Team"

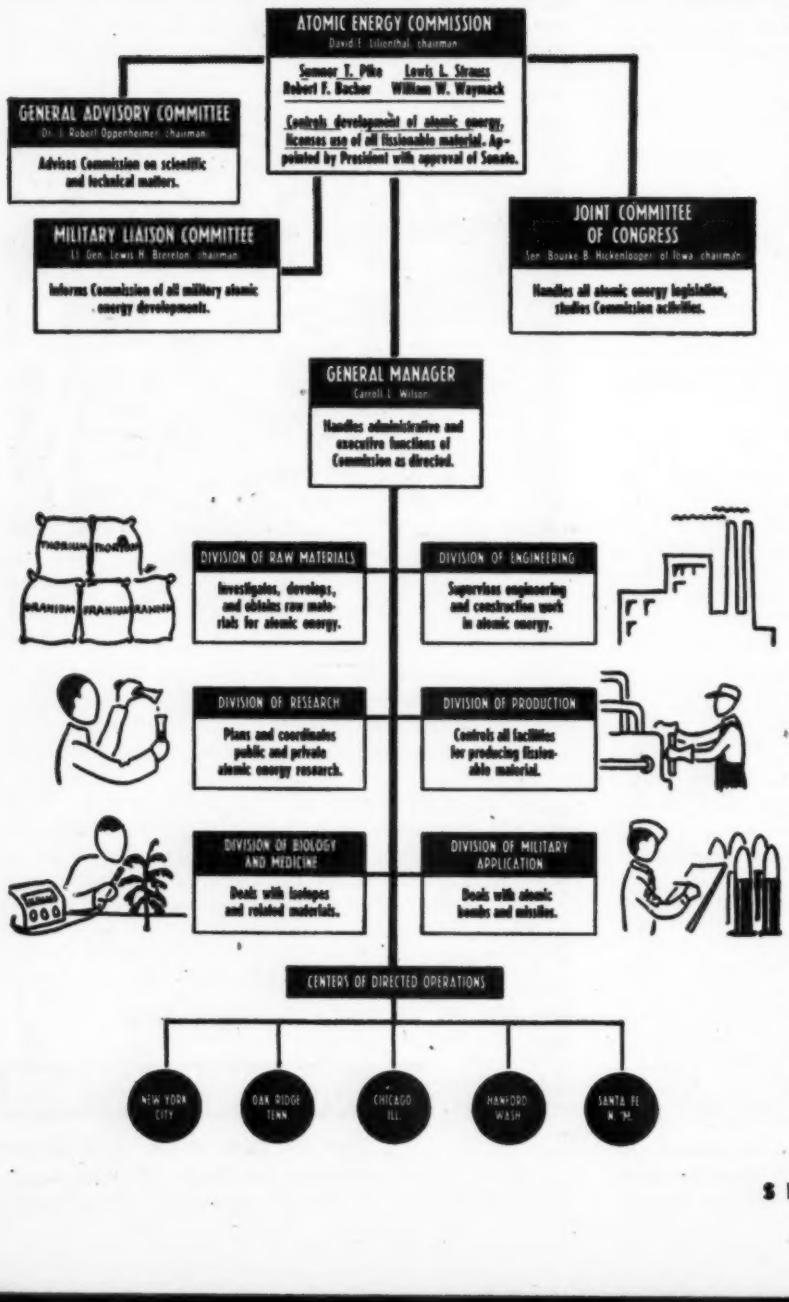
The five Commissioners work together as a team, arriving at all major decisions jointly. Dr. Bacher is a nuclear physicist from Cornell University who helped assemble the first atomic bomb. Pike was a New England businessman. Strauss has been an investment banker and former Rear Admiral. Waymack was editor of the *Des Moines (Iowa) Register & Tribune*. Chairman Lilienthal (*see page* 3) is the former chairman of the Tennessee Valley Authority. Their ages average 51.

General Manager Wilson, almost unknown to the public, was executive assistant to Dr. Vannevar Bush, director of the wartime Office of Scientific Research and Development.

The nation's scientists worked under OSRD direction in producing thousands of scientific devices which counted heavily in Allied victory. It was Wilson's responsibility to get the right scientists for the right work – and to keep them there. Wilson, who was born in Rochester, N. Y., graduated from Massachusetts Institute of Technology. After graduation, he became assistant to Dr. Karl T. Compton, MIT president. He is married and has four children. His favorite pastime is tinkering with his 20-year-old Rolls Royce.

Senior Scholastic chart by Eva Minerek

How Atomic Energy Commission Operates


ATOMIC ENERGY COMMISSION
David E. Lilienthal, chairman
Sumner T. Pike
Lewis L. Strauss
Robert F. Bacher
William W. Waymack
Controls development of atomic energy, licenses use of all fissionable material. Appointed by President with approval of Senate.
GENERAL ADVISORY COMMITTEE
Dr. J. Robert Oppenheimer, chairman
Advises Commission on scientific and technical matters.
MILITARY LIAISON COMMITTEE
Lt. Gen. Lewis H. Brereton, chairman
Informs Commission of all military atomic energy developments.
JOINT COMMITTEE OF CONGRESS
Sen. Bourke B. Hickenlooper of Iowa, chairman
Handles all atomic energy legislation, studies Commission activities.
GENERAL MANAGER
Carroll L. Wilson
Handles administrative and executive functions of Commission as directed.
THORIUM
URANIUM
DIVISION OF RAW MATERIALS
Investigates, develops, and obtains raw materials for atomic energy.
DIVISION OF ENGINEERING
Supervises engineering and construction work in atomic energy.
DIVISION OF RESEARCH
Plans and coordinates public and private atomic energy research.
DIVISION OF PRODUCTION
Controls all facilities for producing fissionable material.
DIVISION OF BIOLOGY AND MEDICINE
Deals with isotopes and related materials.
DIVISION OF MILITARY APPLICATION
Deals with atomic bombs and missiles.
CENTERS OF DIRECTED OPERATIONS
NEW YORK CITY
OAK RIDGE TENN.
CHICAGO ILL.
HANFORD WASH.
SANTA FE N. M.

English Section

Universe Unlimited

THE challenge of the unknown, of the unexplored world beyond man's scientific frontiers, has never failed to stir the poets and story tellers, even as it has tormented the restless imagination of scientists.

This urge to explore the shimmering world beyond the horizon has sometimes given us creative writing of a high order. In his play *Doctor Faustus*, written in 1588, Christopher Marlowe tells the story of a scientist so athirst for infinite power and knowledge that he yearns to be "great Emperor of the world." Weary of science, Faustus turns to magic and conjures up the devil. He makes a bargain to surrender his soul to the devil in return for 24 years of life. The devil agrees that during these years he will give Faustus whatever he demands. In Marlowe's play we have the medieval concept which linked science with magic and the supernatural.

The notion that the supernatural begins where science leaves off did not die with the Middle Ages. In her novel *Frankenstein*, written in 1818, Mary Shelley, the wife of the poet, created a ghastly extravaganza on pseudo-scientific principles. Her story was built around an artificially created monster, endowed with life, who turns upon the scientist who created him. The name of the scientist, Frankenstein, has since come into our language as a term applied to any mechanical creation which dominates its creator.

Sometimes writing based on pseudo-science is used to drive home a moral or social idea. In his play *R.U.R.* (Rossum's Universal Robots), written in 1923, Karel Capek, the Czech playwright and patriot, delivers a social sermon. Rossum is an inventor who has found a way to manufacture artificially persons that are mechanically efficient but devoid of sensibility. Eventually these robots turn on man, destroy him, and take over the world. But the robots are doomed to extinction, for they are unable to reproduce themselves and the formula for their manufacture has been destroyed. They are saved only when they become inspired with human ideals and human love.

R.U.R. is essentially a philosophical treatise. *Gulliver's Travels* is an earlier specimen of this type of literature. Jonathan Swift had his hero visit four wonder countries in order to satirize the manners, morals, art, and politics of his time.

ASIDE from moral and social speculation based on science, we have the field of writing known as science fiction. The science fiction writer is not always concerned with moralizing, nor does he claim that his story is prophecy or even fact. He says simply that it is a projection of known science into possible future fields or uses.

Perhaps the earliest science fiction story was written in 1835 by Richard Adams Locke, a friend of Edgar Allan Poe, who was a reporter for the *New York Sun*. Locke loved a good joke but had a weak sense of journalistic responsibility. He cooked up a news story which announced the discovery of men and animals on the sunny side of the moon. The *Sun* published his story as a straight scientific report. The hoax temporarily fooled even a delegation of Yale scientists and set the pattern for most of our modern speculative writing.

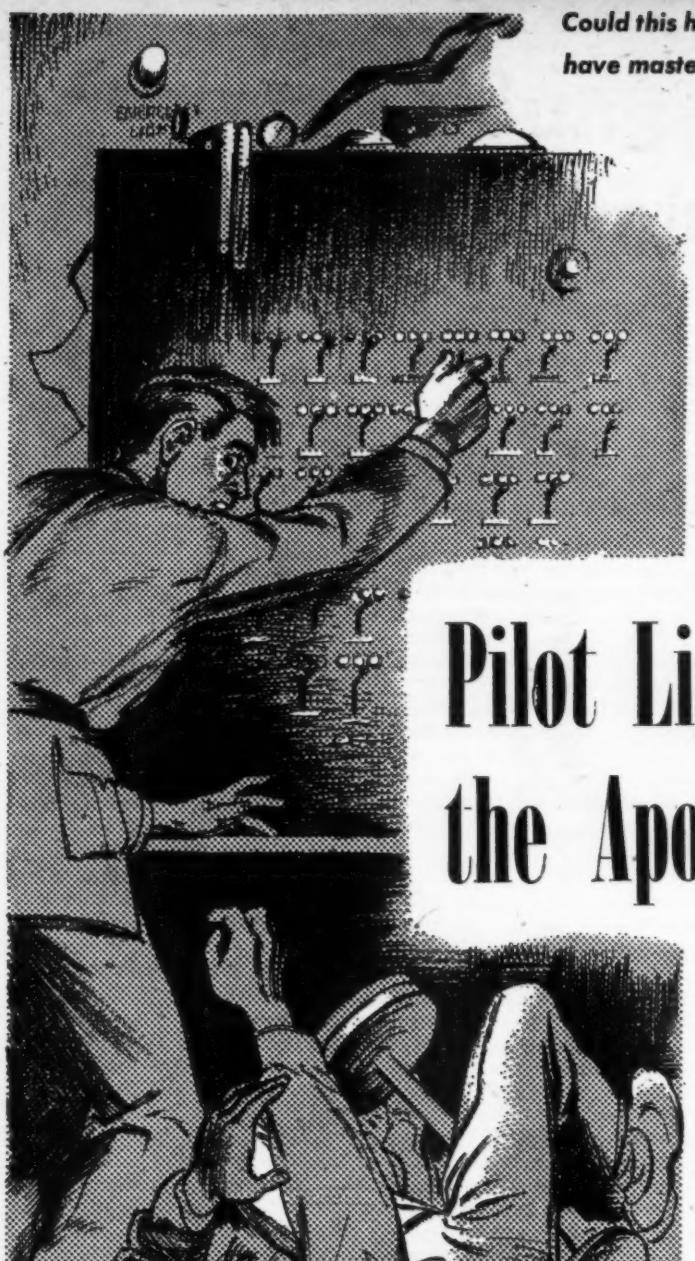
In 1844 Edgar Allan Poe wrote a hoax story of his own, which was published in the *New York Sun* as straight news. Poe reported that the Atlantic had been crossed in 75 hours by eight men in a flying machine that started in North Wales, England, and landed in South Carolina. The story was soon uncovered as a hoax, of course. But suppose Poe's report had been about two brothers who were supposed to have tried out a flying machine on the sands near Kitty Hawk in North Carolina? The readers of the *Sun* would still have called it a hoax, while a later generation might have called the story prophecy. But it would have been neither. It would still be science fiction.

AS scientists explored the world about them and pushed back man's horizon to its farthest limits, the imagination of science fiction writers pushed it back still farther. Among the earliest of these writers was the French author, Jules Verne, whose works were published shortly after our Civil War. In *From the Earth to the Moon, Twenty Thousand Leagues Under the Sea*, and *Journey to the Center of the Earth*, Verne was writing entertaining fiction, blending make-believe with reality. Certainly few of his contemporaries regarded his stories as prophecy, nor do we today. Neither are they fantasy. For men have already explored the floor of the ocean, rockets are a reality, radar waves have bounced off the moon, and until it is proved that the earth is not partly hollow—and it has not been proved—we cannot charge Verne with writing fantasy.

After Verne came H. G. Wells. In *The Time Machine, The Invisible Man*, and *The War of the Worlds*, we are treated to creative writing of a high order. The scientists themselves would be the first to deny that this is fantasy.

In 1889 Frank R. Stockton wrote a novelette called *The Great War Syndicate*, in which he worked out the patterns for a couple of weapons against which it was impossible to devise defenses. The effects of one of his weapons had an uncanny resemblance to those of the atomic bomb that obliterated Hiroshima. And as for defenses . . .

Conan Doyle, Ambrose Bierce, Mark Twain and many others have dipped their pens in science to give us imaginative fiction. But there is no reason to argue over whether they or the present writers of science fiction are prophets looking far into the future or simply weaving fantasy. We ought first to look upon this type of writing as fun. And it is fun of a high imaginative order that soars into time and space carrying us along as wide-eyed passengers on voyages into the unknown.



Could this happen after the great nations have mastered the use of atomic power?

Pilot Lights of the Apocalypse

THE curtain rises to disclose the operations room of the Western Defense Command, somewhere in the San Francisco area and a hundred feet underground. Two sergeants, right, are tending a row of teletype machines that connect the room with the world's principal cities. Two others, rear, sit before a sort of telephone switchboard with key switches, lights, and labels representing the world's major cities. Behind them stands a captain. At a large desk, center, sits a brigadier general and two colonels, all reading teletype messages. The wall, left, has a sturdy barred door, a world map, and a framed motto: "Remember Pearl Harbor."

TIME: *Some years after all the industrialized nations have mastered the production and use of atomic power.*

BRIGADIER (*laying down the message he has been reading*): Nothing much tonight, I'd say. We'd better get tidied up a little, Captain Briggs!

CAPTAIN (*facing about and standing at attention*): Yes, sir.

BRIGADIER: Ready for company?

CAPTAIN: Yes, sir. I think so, sir.

BRIGADIER: See that the men look busy – on their toes and busy.

CAPTAIN: Yes. sir. (*A bell rings.*) Schwartz, you get the door. (*One of the sergeants crosses to the door and opens it. All stand rigidly at attention. A little confused, the sergeant goes through the formality of examining passes. He then admits a group of four: a four-star general, a major, and two civilians.*)

GENERAL: Carry on. (*The men relax. The General leads the two civilians over to the Brigadier and the Colonels. The Major takes up his station by the door. Nobody pays any attention to him.*) Mr. President, this is General Anderson, Watch Officer in charge of the Operations Room.

THE PRESIDENT: How do you do?

BRIGADIER: How do you do, sir? (*They shake hands.*)

GENERAL: Colonel Sparks and Colonel Peabody, Deputy Watch Officers on duty.

THE PRESIDENT: Glad to meet you both. (*They shake hands.*)

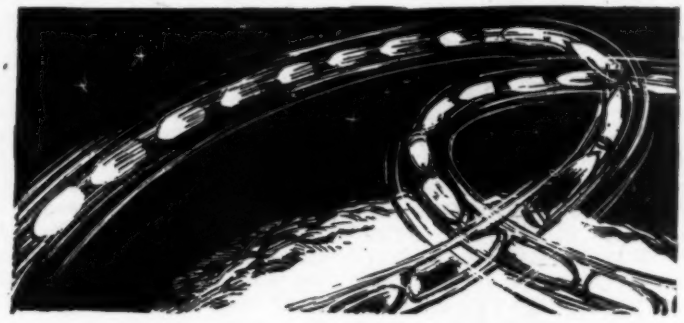
GENERAL: Dr. Thompson – General Anderson, Colonel Sparks, and Colonel Peabody. (*All nod and smile.*) Now, Mr. President, this is the nerve center of our counterattack organization for the western area. The teletype machines you see over there (*pointing*) are on radio circuits that connect us with our people in all the principal cities of the world, and with other continental defense commands. The stations, and their statuses, are marked on the map. (*He gestures toward the map.*) We've just come from the defense center, where the radar plots are kept and the guns and the fighters controlled. That's defense. But this

By DR. LOUIS N. RIDENOUR

is counterattack. Along that wall (*waving toward the rear*) is our control board. If you'll step over here, sir, I'll show you how it works.

THE PRESIDENT (*moving with the General toward the telephone switchboard against the back wall*): Defense and counterattack, eh? Why keep them separate?

GENERAL: Well, the defense has to move quickly, or it's no good at all. They don't have time to think. But counterattack — well, counterattack has to move quickly, too. But we want them to have time to decide what they need to do. You can't tell just from the direction of an attack who launched it. An attack might be staged entirely by mines planted inside our borders, so there wouldn't be any direction connected with it. And then again, we have pretty good information that some other countries besides us have got bombs up above the stratosphere, 800 miles above the earth, going round us in orbits like little moons. We put up 2,000 and we can see about 5,400 on our radar. Any time, somebody can call down that odd 3,400 by radio and send them wherever they want. There's no telling from trajectory which nation controls those bombs. What this all means is that the data these fellows here have to go on is mainly political. Radar doesn't do them any good. What they need is intelligence; and that's what comes in all the time, as complete and up-to-date as we can get it, on the teletype. In the defense center, you saw scientists and technicians. The officers here are political scientists.



THE PRESIDENT: That's very interesting. Maybe you'll give me a job here if I ever need one. I'm a political scientist.

GENERAL (*laughing just enough*): Yes, sir!

THE PRESIDENT: General, you haven't told me what all these gadgets are for. (*He waves toward the switchboard.*)

GENERAL: No, sir, I haven't. This is our counterattack control board. You see that every station is marked with the name of a city. And every station has three pilot lights: red, yellow, and green.

THE PRESIDENT: All the green ones are on.

GENERAL: That's right, sir. We have unattended radio transmitters, each with three spares, in stations in every city covered on this board. If one of the transmitters goes on the blink, a spare is automatically switched on. But if all four transmitters in any station are destroyed, well, we lose the signal from that station. When that happens the green light goes out and the yellow light comes on.

THE PRESIDENT: How about the red light?

GENERAL: That comes on instead of the yellow when all our stations in the whole city go off the air. Yellow means partial destruction — red means substantially complete destruction.

THE PRESIDENT: And green means peace.

GENERAL: Yes, sir. But this isn't just a monitoring board. You see this key here.

THE PRESIDENT: Yes.

GENERAL: That sets off our mines. We have them planted in a great many cities, and the radio control circuit can be unlocked from here.

THE PRESIDENT: Is the whole world mined now?

GENERAL: Well, no. We haven't bothered much with Asia. And some countries are so hard to get into that coverage is spotty. Our schedule calls for completion of mine installations in two more years. But we have another card to play. You remember I told you about the satellite bombs — the ones that are circling around, 800 miles up?

THE PRESIDENT: Yes.

GENERAL: Well, this other key here will bring down on the city shown on the marker — we are looking at Calcutta — one of those satellite bombs every time it is pressed.

THE PRESIDENT: Is one of those bombs earmarked for each particular city?

GENERAL: No, sir. The bomb that happens to be in the most favorable location at the time this key is pressed is the one brought down. It might be any one of the whole 2,000.

THE PRESIDENT: This is all damned clever.

GENERAL: We have Dr. Thompson to thank for most of it. His people worked out all the technical stuff. All the Army has to do is man the installations and watch the intelligence as it comes along.

DR. THOMPSON: Good of you to say that, General. But seriously, Mr. President, as people pointed out soon after the first atomic bomb was dropped, there isn't any other nation with the industrial know-how to do a job like this.

THE PRESIDENT: It is very impressive, I must say. Are the other Defense Commands equipped the same way?

GENERAL: Yes, sir. As a matter of fact, to guard against accidents, each Defense Command has two complete operations rooms like this, either one of which can take full control if the other is destroyed.

THE PRESIDENT: We've kept ahead in the armaments race. Who'd dare attack us when we're set up like this?

DR. THOMPSON: Surely nobody would. I don't think you need expect any trouble.

THE PRESIDENT: Well, this has all been very interesting. (*To the Brigadier*) General, have you had any exciting times here you can tell me about?

BRIGADIER: Yes, sir. Every time a meteorite comes down — a shooting star, you know — our radar boys track it, shoot it down, and send us in an alert. We have a few bad moments until we get the spectrographic report. If it's iron and nickel — and it always has been so far — we know God sent it, and relax. Someday it'll be uranium, and then we'll have to push a button. Or plutonium.

THE PRESIDENT: How many shooting stars have you shot?

COLONEL SPARKS (*laughing politely*): We get an average of twelve a month. In August it's the worst, of course. The Perseids, you know.

THE PRESIDENT (*puzzled*): Iran . . .?

BRIGADIER (*hastily*): No, sir. The Perseid meteors. Named after Perseus. Astronomers are a classical bunch.

THE PRESIDENT (*recovering*): Oh, sure. (*Turning to the Colonels*) Gentlemen, how do you like this job?

COLONEL SPARKS: We have a feeling of grave responsibility.

THE PRESIDENT: The fate of nations is in your hands. But always remember that our nation is the most precious.

BOTH COLONELS (*awed*): Yes, sir.

GENERAL: Well, Mr. President, we've fallen a little behind our schedule. They'll be waiting for us at the mess.

THE PRESIDENT: All right, General, let's get along. General Anderson, Colonel Sparks, Colonel Peabody, I've enjoyed very much seeing your installation. Keep on your toes. We're all depending on you.

GENERAL AND COLONELS (*together*): Yes, sir. (*Schwartz goes over, opens the door, and stands stiffly at attention as the visitors file out amid a general chorus of "Goodby" and "Goodby, sir." Schwartz closes the door. The Brigadier and Colonels sit at their desks.*)

BRIGADIER: Well, that's that. The Old Man gave him a good story; I couldn't have done better myself.

COLONEL SPARKS (*still in the clouds*): He is depending on us.

BRIGADIER: Don't take it too hard. All we're supposed to do is make the other guy sorry. We can't save any lives or rebuild any cities. Never forget what those buttons do.

COLONEL SPARKS: Just the same, sir, I'm glad I was born an American. We've got the know-how. I'm glad I'm on the side that's ahead in the race.

COLONEL PEABODY (*disgusted*): Sparks, you talk like a high-school kid. For this job, you're supposed to have some good sense and detachment.

(*Just then, there is a dull rumble. The floor and the walls of the room shake, and a couple of sizable chunks of concrete fall out of the ceiling. The lights go out, except for the green ones in the control board. Emergency lights, dimmer than the regular ones, come on at once. All the men are on their feet.*)

BRIGADIER: What was that? (*Recollecting himself*) Peabody, get on the phone to headquarters. Sparks, get out the red-line messages for the last twenty-four hours. Captain, anything from the defense center?

CAPTAIN: My line to them seems to be out, sir.

BRIGADIER: What have you got for status? Anybody showing yellow or red?

CAPTAIN: San Francisco is red, sir.

COLONEL SPARKS (*riffling wildly through teletype messages*): This must be it! San Francisco! (*Screaming*) San Francisco gone!

BRIGADIER: Shut up, Sparks. Take it easy. (*To Peabody*) Can't you get headquarters?

COLONEL PEABODY: The line is dead. I can't get reserve operations, either. Maybe this *is* the real thing.

COLONEL SPARKS (*Still half-hysterical*): We better do something. Remember what it says in the book: counter-attack must take action before the enemy's destruction of our centers is complete.

BRIGADIER: First we need an enemy. Who's got the highest negative rating in the latest State Department digest?

COLONEL PEABODY (*who has quietly taken the messages from in front of Sparks*): Denmark, sir. But it's well below the danger point. All we've got is this: (*reading*) COPENHAGEN 1635 HOURS 22 JANUARY. WIDESPREAD DISAPPROVAL OF WILLIAMS FOUNTAIN, STATUARY GROUP PRESENTED THE KING OF DENMARK BY U. S., BEING SHOWN BY PEOPLE COPENHAGEN. FOUNTAIN BEEN PELTED VEGETABLES BY HOODLUM GROUPS THREE OCCASIONS. FORMAL PROTEST STATING STATUE INSULTS KING RECEIVED FROM ROYAL ACADEMY ART IN FOLLOWING TERMS QUOTE . . . and so on. Nothing there, I'd say.

COLONEL SPARKS: Nothing there! San Francisco's in ruins, you fool, and we're sitting here like three warts on a pickle. All that over a lousy set of statues. I say let 'em have it.

BRIGADIER (*to Peabody*): Is that the hottest you've got?

COLONEL PEABODY: Yes, sir. I don't think it could have been Denmark. Though that sculptor, Williams, does live in San Francisco.

BRIGADIER: We better wait and be sure. Captain, how are your lines now?

COLONEL SPARKS (*with rising hysteria*): What have we got this stuff for if we don't use it? Didn't you hear what the President said? He's depending on us; they're all depending on us. If you haven't got the guts, I have. (*Before he can be stopped, he rushes to the control board and shoves a sergeant to the floor. Peabody is after Sparks in a flash. He pulls him around and knocks him to the floor. Sparks' head hits hard, and he lies still.*)

COLONEL PEABODY: General, he did it! Copenhagen shows red!

SERGEANT (*at a teletype*): Sir, here's a message from the defense center. They've got their line working again. (*He tears off and brings it to the Brigadier.*)

CAPTAIN: Stockholm's gone red, sir.

COLONEL PEABODY: Sure. The Danes thought it was the Swedes. That export-duties row.

BRIGADIER: And the Swedes have got two hot arguments on their hands. They'll take the British, too, just to be sure. The British soak the Russians, and then we're next. (*He reads the message he has been holding, and drops into a chair.*) Peabody, that was an earthquake! Epicenter right smack in San Francisco.

CAPTAIN: London's gone red, sir. And Edinburg, and Manchester, and Nottingham, and —

COLONEL PEABODY: Dark Ages, here I come. It's a pity the Security Council didn't have time to consider all this.

BRIGADIER: Peabody, you're beginning to sound a little like Sparks. Come to think of it, there was nothing wrong with him but too much patriotism and too little sense. Captain, we probably can't pull this out of the fire but we've got to try. Send a message on all circuits. (*The Captain sits down at a teletype keyboard.*)

CAPTAIN: Ready, sir.

BRIGADIER: To all stations: URGE IMMEDIATE WORLDWIDE BROADCAST THIS MESSAGE: DESTRUCTION COPENHAGEN 1910 HOURS THIS DATE INITIALED BY THIS STATION THROUGH GRIEVOUS ERROR. ATTACKS MADE SINCE BASED ON IDEA DESTRUCTION COPENHAGEN WAS ACT OF WAR, WHICH IT WAS NOT REPEAT NOT. URGE ATTACKS BE STOPPED UNTIL SITUATION CAN BE CLARIFIED. THERE IS NO REPEAT NO WAR. END.

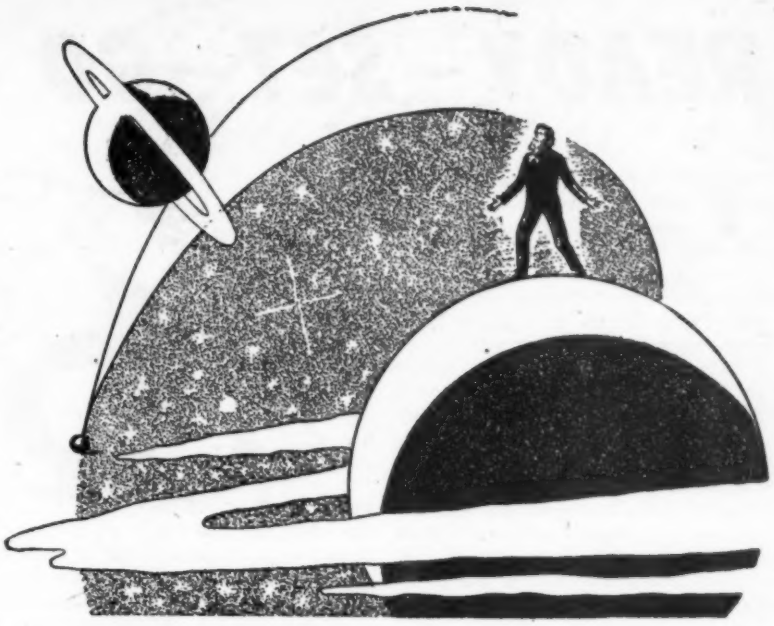
COLONEL PEABODY (*who has been watching board*): The hell there isn't. New York's gone red, and Chicago, and . . . (*The room rocks, the lights go out. With a dull, powerful rumble, the roof caves in.*)

CURTAIN

The Author

Dr. Louis N. Ridenour is Dean of the Graduate School of the University of Illinois. He is a nuclear physicist. During the war he was assistant director of the Radiation Laboratory at M.I.T. where he helped develop radar weapons. Dr. Ridenour has not tried to write a fantasy; he has tried to put into the form of a grim playlet the sober conclusions to which he feels driven by his knowledge of physics, weapons, and human behavior. The moral of the play: we should do all that we decently can do to avoid an atomic armament race. Dr. Ridenour's play appeared once before in *Scholastic*, in our April 29, 1946 issue. We are reprinting it in this issue because of the dramatic power with which it makes its point.

This playlet appeared in the January, 1946, issue of *Fortune*, and is reprinted by permission. Copyright, 1946, by *Time*, Inc. Dr. Ridenour retains production rights, and no group may perform the play without obtaining his permission. Write: Dr. Louis N. Ridenour, Dean, The Graduate College, University of Illinois, Urbana, Illinois.



The Poets and Atomic Vision

Sublime he sits, no Worldly Strife
His Bosom vexes,
Reducing all the doubts of Life
To Y's and X's . . .

PEOPLE have had as many ideas about science as about love. For example, there is the somewhat naive attitude Arthur Guiterman shows in the above lines from "A Pure Mathematician." Guiterman rejoiced under the influence of a delusion, for the security once offered by mathematical pursuits is no longer with us. Today, scientists find that X and Y are only signposts pointing the way to deeper explorations. Who knows, perhaps X, when tracked to its final lair, will burst like a cosmic bomb in the face of science? Then Y will equal—what?

Walt Whitman must have found an idea of this sort disturbing. He was the kind of poet who refused to consider the fact that the green in a leaf of grass is the coloration of chlorophyll. Whitman preferred to call it "the beautiful uncut hair of graves" or "the handkerchief of the Lord." A lecture room only made him restless. He confides this to us in the following poem:

When I Heard the Learn'd Astronomer

When I heard the learn'd astronomer,
When the proofs, the figures, were ranged in columns before me,
When I was shown the charts and diagrams, to add, divide, and measure them,
When I sitting heard the astronomer where he lectured with much applause in the lecture room,
How soon unaccountable I became tired and sick,
Till rising and gliding out I wander'd off by myself,
In the mystical moist night-air, and from time to time,
Look'd up in perfect silence at the stars.

Lionel Wiggam, a young poet whose literary career began with the Scholastic Writing Awards while he was still in high school, shares Whitman's tendency for slipping out to observe nature—but with a difference! Wiggam sees algebra and geometry wherever his eye alights. In "Mathematics," Wiggam advises:

Bend and carefully observe
The petal's precise fabric curve.
This is mathematics true
Beyond the kind that men construe.

Samuel Hoffenstein is another anti-scientist. There are many more important things than mere scientific knowledge, Hoffenstein feels:

Little by little we subtract
Faith and Fallacy from Fact,
The Illusory from the True,
And starve upon the Residue.

The learned Dr. Faustus, a scholar who sold his immortal soul to the devil in exchange for superhuman knowledge, was the Middle Ages' concept of the arch-scientist. In Christopher Marlowe's mighty play built around the Faust legend, the death of Faustus is recounted with extraordinary poetic power. Here we witness the final hour of the notorious "scientist" and the carrying away of his soul by Mephistopheles (the devil):

Faustus: The stars move still, time runs, the clock will strike,
The devil will come, and Faustus must be damned.
O, I'll leap up to my God! Who pulls me down?
See, see, where Christ's blood streams in the firmament! . . .
(*Enter Devils*)
My God! my God! look not so fierce on me!
Adders and serpents, let me breathe a while!
Ugly hell, gape not! come not, Lucifer!
I'll burn my books!—Ah, Mephistopheles! (*Exeunt Devils with Faustus*)

A later version of the story, written by the German poet Goethe, allowed Dr. Faustus to attain eventual salvation. Faust, who had vainly sought satisfaction in intellectual pursuits, saves himself at last through an understanding of beneficence. This is the highest science, for it proposes the use of knowledge for man's betterment. A modern philosopher-poet, George Santayana, puts it this way:

O world, thou choosest not the better part!
It is not wisdom to be only wise,
And on the inward vision close the eyes,
For it is wisdom to believe the heart.

READY—SET—GO

By Katharine E. Wilkie

"YOUR NEXT homework assignment will be to write a four-page theme. Choose any topic you wish."

Do you smile eagerly when you hear this announcement? Do you say to yourself, "This will be a cinch; with so many ideas on tap, I can't miss"?

Of course you don't—not if you're an average teen-ager. You're more likely to sigh (inwardly, if not outwardly) and to say to yourself, "Ho-hum, another one! What on earth can I write about?"

Let's tackle this problem sensibly, instead of listlessly or frenziedly. It may turn out to be fun!

Don't choose a topic that bores you. Don't choose a topic that floors you (i.e., one you know nothing about). *Write about what you know and like.*

Don't hold forth on Daniel Boone, for instance, unless you think of him as a flesh-and-blood person—a tough, weatherbeaten frontiersman, with a long rifle over his shoulder, and a hankering for adventure. Your theme won't come alive if Dan'l Boone doesn't come alive for you. If you must dig him out of an encyclopedia, let him alone.

Your world is full of interesting ideas for themes. Consider just a few of the things you do or think of every day. Dancing, dating, Alan Young—or Jeanne Crain—bowling, frosted chocolates, ice-skating, basketball, hamburgers "with" or "without," radio programs (some of them!), and window-shopping at the dime store.

Or, if you have a chip on your shoulder today, look at the negative side of the picture. Let off steam by writing about something you *don't* like. What's your pet peeve? Carrots? French verbs? Party lines on the telephone? Writing themes? Any of your "don't likes" would be a natural for you, if you have a knack for sarcasm or satire.

Compare your list of likes and dislikes with your friends! Talking over your ideas might lead to new topics. What's sirloin to one person is spinach to another. Well, say—*there's* an idea for a theme!

Writing is creative. But it's also a craft—a job—like cooking or carpentering. You can't begin to bake a cake until you gather together flour, milk, eggs, sugar, etc. You can't build a garage until you collect lumber, nails, hammer and saw.

You can't begin to create a theme until you collect your materials. Once you've chosen a topic, you must have supplies—mental pictures that have merged into words, phrases, or sentences—before you begin work.

Use Your Senses—All Five

What if your train of thought refuses to get underway? Try this trick: think about your subject in terms of your five senses: *seeing, hearing, smelling, feeling,* and *tasting.*

Your train of thought has probably been chugging along just one track. You've overworked the sense of *seeing,* and neglected the other channels through which you receive impressions. Let's say your title is *A Day in June.* What mental pictures first come to your mind? Warmth, sunshine, roses, swimming, honeysuckle, freedom, vacation, moonlight, hammocks, outdoor meals, picnics, friends, tennis, canoeing. Note how many of those ideas come from *looking* at things.

Now make a systematic search along the other routes. *Hearing:* birds singing, children playing, dogs barking, crickets breaking the stillness of the night. *Smelling:* the fresh scent of rain, the fragrance of newly-cut grass, the aroma of strawberry preserves through the kitchen window. *Feeling:* the velvet smoothness of rose petals, soft summer breezes, the cold shock of the season's first swim. *Tasting:* barbecued chicken, homemade ice cream, corn on the cob.

Do you see what you're doing? You've taken the first steps in building a theme. You've assembled a mass of material. What are you going to do with your materials? That depends on your imagination, your writing skill, your vocabulary, and your grasp on grammar. Admittedly, it takes practice to create fluffy, toothsome angel cakes, or sturdy, foursquare buildings, or interesting themes. So start in.

For cakes, you follow recipes. For garages, you follow blueprints. For themes, too, there are construction rules you can follow:

1. *Make a rough outline of what you want to say.*

As you make the outline, jot down reasons and examples that come to mind.

2. *Plunge in and write.* Just scribble the thoughts that started percolating when you jotted down ideas and drew up your outline. Don't brood over individual sentences. Work only to get down everything you want to say.

Check and Double Check

3. *Check your theme.* The formula is familiar: ninety-eight per cent perspiration, and two per cent inspiration. Here's a check list for the "perspiration" part.

a. *Are the sentences simple, complex, or compound?*

b. *Does every sentence—or clause—have a subject and a predicate?*

c. *Do the modifiers modify, or do they dangle helplessly?*

d. *Is your spelling correct?* Are you certain about *every word?*

e. *Is your punctuation proper?*

4. *Make a trim, tidy copy.* Don't even dream of handing in the erased, crossed-out version.

Trouble? How right you are! But it's worth it. "Craftsmanship" is the word professional writers use when they talk about technically perfect writing. We aren't all born with writing talent. We can't all write under the exciting spell of inspiration. But everyone can be a top-notch craftsman.

Young Voices

Student Writers' Own Weekly Page

Science Fiction

THE average literary critic regards himself as a real authority on literature. He feels that he is familiar with all the literature that is coming out, and that he knows what is worthwhile and what is not. However, there is one source of good literature which most of the literary critics seem to have overlooked. That source is a rather humble-appearing magazine, displayed monthly on the news stands. It is called *Astounding Science Fiction* and is published by Street and Smith under the editorship of John W. Campbell, Jr.

In appearance, *Science Fiction* is not spectacular. Its dimensions are pocket-size, since it was cut down during the paper shortage. It is printed on a good grade of paper, and its 162 pages contain very little advertising. Usually its table of contents includes two or three novelettes, two or three short stories, and an article on some little-known phase of science or technology. The regular features are an editorial, a reader-letter column, and "In Times to Come," a forecast of the coming issue. Cover paintings are of very good quality; however, the interior art, long the subject of much reader discussion, is poor.

Science Fiction is rated as a pulp. However, the magazine is not in a class with its so-called competitors in the science fiction field. These alleged competitors run, for the most part, common pulp trash, although there occasionally appears in them something worthwhile. The only claim to the pulp ranks that *Science Fiction* had was the paper, and this has been remedied recently. In addition, at least one newsdealer has begun to place the magazine with technical publications.

The title "Astounding" may cause some doubt as to the quality of the material, but this doubt cannot long remain. Formerly given top billing, "Astounding" is being progressively reduced and its total elimination is promised for some time soon.

Science Fiction's editor, John W. Campbell, Jr., is an M. I. T. graduate nuclear physicist; this accounts for the fact that atom war stories have been given preference since Hiroshima. It is interesting to note that in 1940, in connection with a story predicting radioactive warfare in the mid-1940's, Campbell remarked: "I'm most desperately afraid that the author is absolutely correct." In an editorial in 1938, he made the prophecy that the man who would develop atomic power was alive in the world at that time. Perhaps Mr. Campbell was connected in some way with the Manhattan Project, but I prefer to believe that his prophecies were due to nothing more than a sound, intelligent mind.

Some indicator of the quality of the stories published in *Science Fiction* may be the two anthologies of scientific fiction issued recently. One of these contained 35 stories, 33 of which were from the one magazine! The other collection, while drawing more from other sources, still collected the vast majority of its stories from Campbell's magazine. The reason for this quality is not hard to find – Campbell has been seriously interested in science fiction since he became editor, and he has included stories not because of the number of magazines that they might sell, but because he believes they are worth printing. It is true that the magazine ranks at the bottom of the list in its field in terms of circulation, but that is more often than not the final indicator of quality.

During its brilliant history under Campbell's editorship, *Science Fiction* has published such masterpieces as "Slan," by A. E. van Vogt; "Methuselah's Children," by Robert A. Heinlein; "The Gray Lensman," by E. E. Smith, Ph. D.; "World of A," by A. E. van Vogt; "Renaissance," by Raymond F. Jones; "Final Blackout," by L. Ron Hubbard; the Foundation series of Isaac Asimov; "Gather, Darkness!" by Fritz Leiber, Jr.; "Pattern for Conquest," by George O. Smith; and many others. It has introduced such authors as A. E. van Vogt, L. Sprague de Camp, Theodore Sturgeon, Robert Heinlein, and uncountable others. It has published articles on astronomy and space navigation by R. S. Richardson, head of the Solar Department of Mount Wilson Observatory. And it has presented the editorials of John Campbell, which alone are worthy of an essay. These deal not only with technical subjects, but also with atom-bomb foreign policy and other subjects we would hardly expect a magazine editor to be an authority on.

Most of *Science Fiction's* authors are themselves technicians of one kind or another, but it would be pointless to recount their names here. The important concept that I wish to establish is that *Astounding Science Fiction* is worthy of much more attention from the literary world than it now receives. This attention, I believe, is slowly making itself felt. The July, 1946, issue of *Science Illustrated* ran an article on the subject. The September 1946 *Harper's* also published an article. Somewhat different in scope from the *Science Illustrated* piece, it yet arrived at the same conclusion: *Science Fiction* is in a class by itself and no one need be ashamed of reading it.

Donald Wilson, 15
Banning Union High School
Banning, California
Teacher, Armen Sarafian

Donald Wilson's valiant defense of what is obviously his favorite science magazine won him a place in the Review finals of last year's Scholastic Writing Awards. Although the style of Donald's review is not particularly notable, he covers his topic competently and settles any questions a reader might wish to raise about the nature of *Science Fiction*. If Donald's write-up of *Science Fiction* recruits new readers for that magazine, it will have served Donald's purpose admirably.

Read All About It

ATOMIC energy — for good or evil? For war and total destruction, or for peacetime uses that will broaden the scope of our everyday living? That is *the* question of our day. Both sides of that question are examined in the fiction in this issue. "The Purple Light" holds out the suggestion of one possible commercial use of atomic power. "Pilot Lights of the Apocalypse" draws a grim picture of the Frankenstein which atomic energy might become.

I. The Atom — for Peace

Unless you have a thorough grounding in science, you may have floundered your way through "The Purple Light." The author uses an element of fact for the basis of his story, but he embroiders the fact with imagination and speculation. If you followed the plot, you'll have no difficulty in choosing the correct ending for each of these statements.

1. When the purple light flashed on in the spaceship, it indicated that the ship would soon be blown to bits because: (a) an atom bomb plant in the vicinity of the ship was about to explode; (b) the U-235 in an atomic power plant (somewhere on the ship) was disintegrating too quickly for its energy to be absorbed by the engine.

2. The ship's quench-field was: (a) an automatic fire-extinguishing system; (b) a device in the atomic power plant which slowed down an impending atomic explosion.

3. Rix's curiosity was aroused when he discovered that: (a) the purple warning light grew dimmer as he approached the ship's power plant, and brightened as he moved away from it; (b) the synth-grav indicated that his ship was disintegrating slowly.

4. Rix's analysis of this phenomenon was that: (a) his own body was composed of exactly the right combination of electric charges to increase the potency of the ship's quench-field; (b) the ship's neutron-streams had been misplaced because of the positrons in the asteroid belt, causing disintegration.

5. The scientists discovered that when Rix had crawled into the ship's power plant; (a) the insulating material in his spacesuit had readjusted the neutron-streams, thus counteracting the disintegration process; (b) the ship's powerful quench-field (located in the power plant) had killed the atomic explosion, which had been building up in the power plant of his spacesuit and not in that of the ship.

II. The Atom — for War!

"Pilot Lights of the Apocalypse" is a sober — and sobering — warning of what we may expect from atomic warfare. After you have read the play, you may want to use these questions as the jumping-off place for a class discussion.

1. What implications do you get from the title of the play? (In what other connection have you heard the word "Apocalypse"? What are the "pilot lights" referred to in the title?)

2. There are people who feel that a third world war is inevitable, and that we might as well get it over with quickly, before other nations learn to manufacture their own atomic weapons. Do you agree with this theory?

3. There are people who advocate our appropriating large sums for national defense, passing UMT and selective service laws, etc. They feel that if we become the strongest military nation, no one will dare to attack us. Do you think the author of the play agrees with this theory?

4. The author feels that an atomic war would be the inevitable result of an atomic-armaments race. Do you agree with this theory; or do you think the world might remain at peace even if it were literally a powder keg? Do you think it is logical for the author to suppose that an atomic war might be touched off accidentally, as it is in the play?

Answers in Teacher Edition

HOW'S THAT AGAIN?

By SLIM SYNTAX

ONE LOOK at our mailbag convinces us that the students at San Diego (Calif.) High School have embarked on a "Stump Slim Syntax" Week! We won't cry "Uncle" yet, but if it's any comfort to you, we have to use the dictionary as often as you do — or as often as you should use it. And for some of these questions, we had to dig deeper than the dictionary! Satisfied?

I have heard of many kinds of ink, but never "sympathetic ink." Please explain the difference between this and ordinary ink.

Kay Holder, San Diego (Calif.) H. S.

Sympathetic ink is a fluid that dries and becomes invisible. Heat applied to a letter written with sympathetic ink brings out the writing. It's an old trick which depends on some sort of chemical reaction. Ask your chemistry teacher about it! (You didn't expect us to explain it, did you?)

• • •

I would like to know the correct uses of "present" (verb) and "introduce." Would you say, "He introduced me to the King" or "He presented me to the King"?

Bette Duncan, San Diego (Calif.) H. S.

To be formal or to be informal — that's the question here. "Introduce" is the informal, everyday word we use in making introductions. "Present" (accent on last syllable, please) sounds fancier — or more formal, doesn't it? In this case the correct form is: "He presented me to the King." Why? Because when you meet the King, you are presented to someone who is superior in rank or position. Also there's usually a ceremony involved. By the way, who is this King you've been introduced to, Bette???

• • •

Could you tell me what "ology" means, as in *teleology* and *theology*?

Ernestine Estrada, San Diego (Calif.) H. S.

"Ology" generally means "the study of." *Teleology means* — hey, you go look it up in the dictionary!

• • •

The word "starve" means "to perish from hunger." Is there any word which means "to perish from thirst"?

Carmen Banda, San Diego (Calif.) H. S.

Not that we or Mr. Webster ever heard of. (Is that southern California climate really *that* dry? If so, we'll send those rain makers who use *dry* ice to produce something really *wet*.)

The Purple Light

Sometimes it pays to crawl right into the heart of trouble

By Theodore Sturgeon

FOREWORD

• Our story this week is representative of the science fiction school of writing. It does not deal with the present. It is built around the author's concept of how men will live in the future. The author would deny that his story is a fantasy having no basis in fact. He would say that he has simply taken present day scientific achievements and imagined how they will be further developed in the future. It is interesting to note that although this story was first published in June, 1941 — four years before Hiroshima — the author used Uranium 235 as the source of power for his spaceship.

I WAS taking No. 14 back to the base when it happened. The figures painted on her scarred molyb hull didn't mean we had fourteen ships. It was one of the four cans — and I mean cans — that comprised our charter service. In the six years we had been operating, we had bought and rebuilt seventeen wrecks, and had seen the end of thirteen of them. One more just at this time would finish us. We couldn't stay in business with less than four spaceships, what with the sudden influx of mining machinery into the asteroid belt and the

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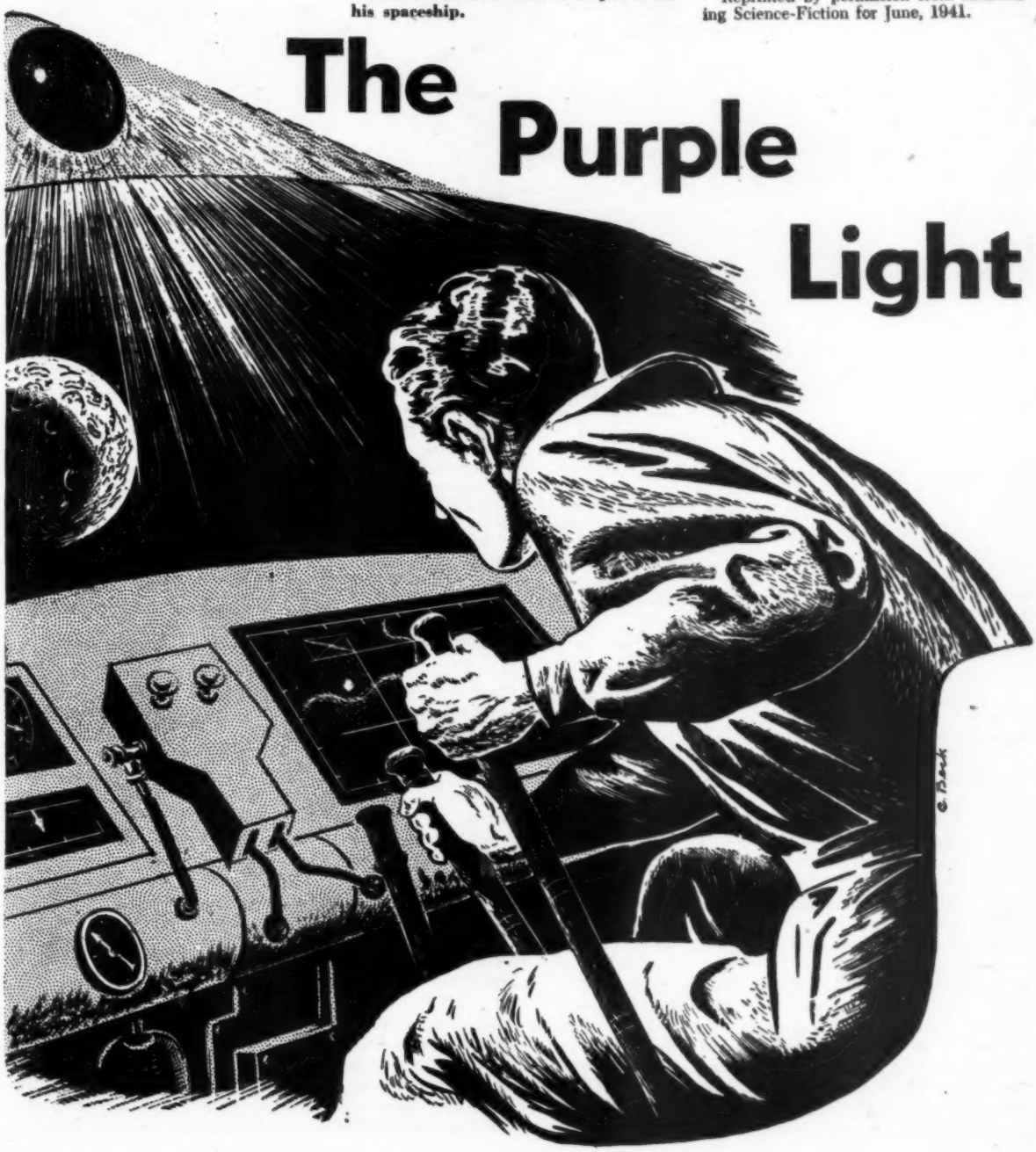
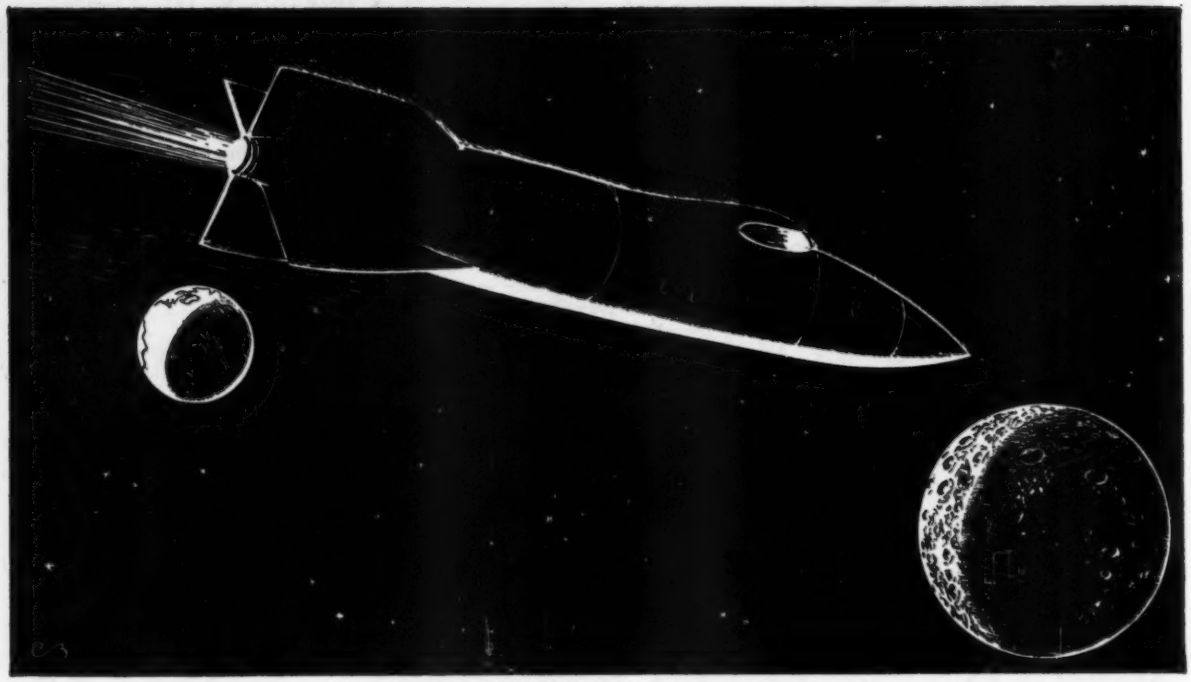




competition of two more freight lines in our territory. And here I was about to wash the old *Kelli N X*.

The purple light had flashed on. There were half a dozen signals of the sort on the little one-man cargo carrier — warnings for lowering air pressure, fuel shortage, synth-grav system troubles — I always thought that was a funny one. You'd fly up off the deck plates and smack your sconce on the overhead, and when you came to, the silly signal light was on to tell you something was wrong with the synth-grav! — even humidity changes and fuel shortage. But the big purple light on the forward bulkhead was something different again.

It was a very bright and a very pretty shade of purple and it said, in effect, "Somewhere around here is an atomic power plant whose U-235 is just at the ticklish point where the disintegration will be too fast for its ordinary energy output. There is about to be an explosion that will make a light bright enough to read a postage stamp by from here to the moons of Mars; and if there is anyone around here just now he'd be foolish to loiter.

Out here in space, you know, it wouldn't make any noise. I wasn't afraid of being startled. Nor was it the kind of an explosion that would butter me over the bulkheads, the way they put it on toast in cafeterias — with a brush. Because there wouldn't be any bulkheads. Or any me. There would be a lot of light and heat and a squib in a trade journal about Rix Randolph, expressman, and how he had been a little careless with his '235.

THE AUTHOR

Theodore Sturgeon is 28 and has been writing fantasy and science fiction for the past eight years. He is an American citizen, although he was educated in England, where his step-father is head master of an English private school. Last year he won a $1,000 prize in a literary contest sponsored by the English magazine *Argosy*. During the war, Sturgeon operated a bulldozer for a civilian contractor who built bases in the Caribbean for the U. S. Navy. He drew heavily on this experience for a grimly fantastic novelette called "Killdozer."

Now it was perfectly evident what I had to do. Also that I had to do it fast. Cut off my power, stop the uranium action. Just possibly the disintegration would slow a trifle, enough to lower the output below the danger point. And if that didn't work — bail out. Slip into the ancient but reliable spacesuit strapped to the bulkhead there and get away in one sweet hurry. I don't know why I thought there was any choice in the matter. The suit was fueled and provisioned for twice the distance from here to either Terra or Port of Eros.

I hopped to the control panel, threw over the three levels that controlled the neutron-streams and their generator. The whisper of escaping steam faded out of the water jackets, and my stomach lurched as acceleration cut out. I looked up at the purple light again. It was still on.

Too late!

I ran to the bulkhead, opened the chest plates of the spacesuit, climbed in, got the arm controls working and flipped the switch that lowered the helmet, closed the plates, and cut down the artificial gravity of the floor plates. It seemed to take an eternity to operate, though it could only have been a couple of seconds; and in that couple of seconds I did a lot of thinking.

That purple light, for instance. There were some bright boys in the ship-designing business, and they had even these old cans nicely enough equipped. The warning device was a result of the labors of that Edison of the spaceways, old Dr. Fonck. He'd invented the attachment to a U-235 plant that emanated a static quench-field to act as a governor to the neutron-streams that activated the uranium. It made the neutron-streams that much more efficient, but who cared about that with all that power to throw around? The important thing was that it blanketed the disintegration to some extent. If the thing was going to blow up with the fury that only an atomic explosion or a supernova can show, it would at least start to blow up slowly. That is, when the reaction started to accelerate beyond control, the quench-field got in the way of the countless millions of neutrons, tending to add a positron to them, and convert them into useless, harmless hydrogen nuclei. It meant a slowing down of the

(*Continued on page* 28)

ADVENTURES of "R.C." and QUICKIE

DEADLINE FOR ACTION!
NOT A SINGLE BITE, QUICKIE. WE'RE SKUNKED
YEAH, LET'S GO CATCH A BOTTLE OF ROYAL CROWN COLA!
THERE'S A PLACE UP THE ROAD WHERE WE CAN....
HEY! I HEAR SCREAMS!
HELP! WE'RE HEADED FOR THE FALLS!
LOOK! THOSE GALS ARE HEADED STRAIGHT FOR THE FALLS! THE ONE IN THE STERN'S LOST HER PADDLE
HELP!
HELP!
HURRY, QUICKIE! GET DOWN NEAR THE FALLS BUT FAST!
THERE'S ONLY ONE CHANCE! I'VE GOT TO REACH THEM WITH THIS LINE AND IT'S GOT TO HOLD! HERE GOES!
HOLD THE LINE, MISS! DON'T LET GO!
GOT IT! B-B-BUT IT'LL BREAK!
WOW! THIS LINE WON'T TAKE MUCH MORE!
IT'S GOING TO BREAK!
WE'RE GONERS!
SNAP!
THE TROUT LINE SWINGS THE CANOE OUT OF THE FURIOUS CURRENT....BUT THE STRAIN IS TOO MUCH
WHEW! WE ESCAPED! YOU'RE WONDERFUL
THERE, MATIES, ALL'S WELL.....AND YOU CAN STEP ASHORE
YES, BUT I NEED A QUICK-UP BEFORE I'LL SIMMER DOWN
REFRESHMENTS
THIS TREAT'S ON US!
THANKS, MISS. ROYAL CROWN COLA! SURE'S A NEAT TREAT!
YOU SAID IT! IT'S THE ONLY COLA THAT'S BEST BY TASTE-TEST
ONE HOUR LATER

GILBERT ROLAND SAYS:

YOU BET YOUR BOOTS R C TASTES BEST!

"I tried leading colas in paper cups," says Gilbert Roland, "and discovered Royal Crown Cola was the best-tasting by far!" Try cool, refreshing R C yourself. Two full glasses in each bottle.

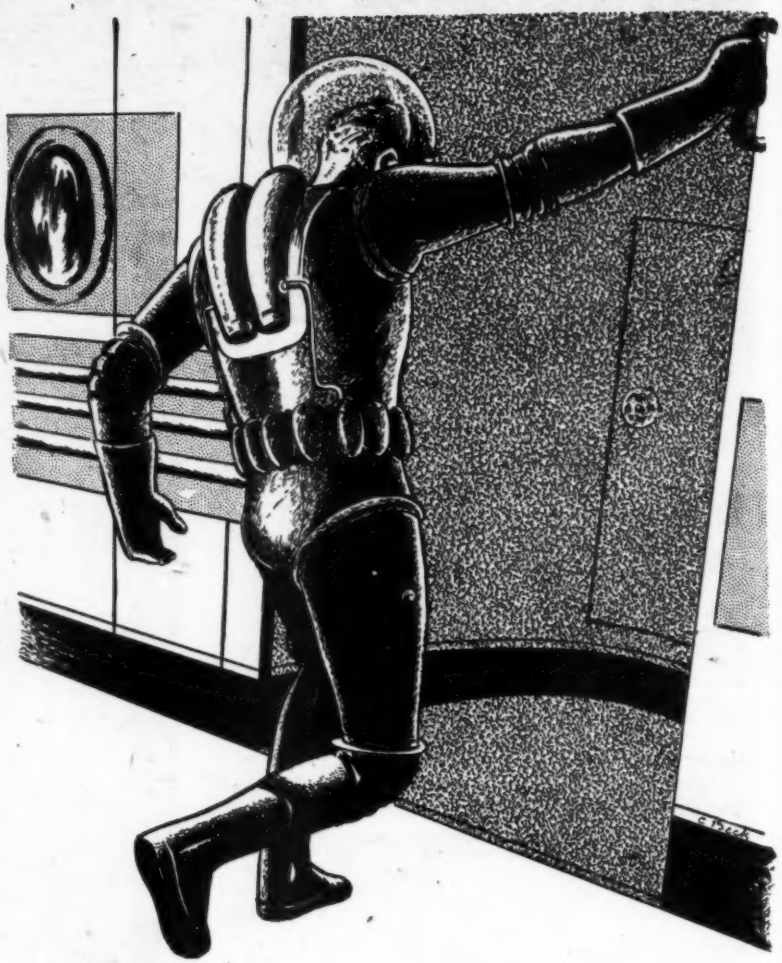
See Gilbert Roland as the Cisco Kid in Monogram's "KING OF THE BANDITS"

ROYAL CROWN COLA
Best by taste-test

ROYAL CROWN RC COLA 2 FULL GLASSES

The Purple Light

(Continued)



whole process, until the neutrons came too fast. Then – lights out.

But at the same time it gave the poor sucker in the ship, or wherever else the plant was, a few minutes grace in which to get away from there. It also gave that purple light a chance to tell him about it. Not much of a warning, of course. Once that kind of a reaction starts, it can't be stopped. The signal was rather like tying a guy to a chair and then telling him, "See that dark character over there? He has a gun aimed at your head and is about to pull the trigger." You were grateful for the warning; at least, you'd know about it before you were shot. Maybe even some miracle would happen to untie you. But in the case of the atomic explosion it would have to be a miracle in speed.

I thought of something else as I released the suit with me inside it from the bulkhead straps. It was the ship, the business – all it meant to me. I was partners in it with my brother, and it had been killing work. Years of it, borrowing for a measly new piece of equipment; twenty-hour stretches with welding arcs and pressure testers, trying to make our old tow-ins spaceworthy; cutting out competition by going profitless, working for nothing and half-starving besides, just to keep the little service extant. With my hand on the air-lock door I paused. This was the finish of the business. I knew that. It wouldn't finish the way I would if I stayed here another two minutes. Not fast and clean like that. There would be desperate councils of war with my brother. Bankruptcy proceedings. Sheriff's sales. Months of litigation. No job in the meantime. Relief. I'd never taken something for nothing in my life.

I slumped against the door and flipped open my face plate.

The Neutron-Field wasn't confined to the power compartment. It was a spherical field about the ship, not directly attached to the power plant. Didn't have to be. As long as it was as close as possible to the plant, as long as it was most concentrated near the neutron-streams, it had its delaying effect on the inevitable explosion. I watched the forward bulkhead glumly, and the light over it. It would come roaring up from there. I wondered vaguely if I would be able to see it coming. Bail out, chowderhead, I told myself desperately. The business is gone; why do you have to go, too? But I didn't move. What's the use of saving a skin if the very guts are gone out of it? I couldn't go on any more. I knew I shouldn't run out on my brother this way, but – what would he do in my place? What would anyone do? Fonck himself couldn't stop it now. No atomic plant can generate a quench-field powerful enough to stop its own explosion. My face was clammy. I decided I didn't want to see it coming, and walked over to the forward bulkhead.

When I did so the purple light dimmed. I stared at it, shook my head. Maybe my eyes – no. It remained dim, but it wasn't getting any dimmer. The other lights looked all right. I walked back to the after companionway, looked along it. Those lights were O. K., too. Now what – Oh! Oh! Now the purple light was brilliant! Any second now. I stumped over to the forward bulkhead again. I'd meet it halfway – darn the miserable, stupid business and the balky relic of a ship anyway! They'd finish Rix Randolph but they'd finish him on his feet! I knew what it felt like now to die with a grand gesture.

I stood with my legs apart, eyes closed, fists clenched, directly under the purple light. I wish that little girl in Port of Eros could see me now, I thought. "All right," I said steadily. "I'm – ready."

Nothing happened for about ten seconds. About that time, I discovered I'd been holding my breath. I let it out with a whistle. Still nothing happened. All of a sudden I felt like a melodramatic fool. Which I was. I opened my eyes. The purple light was dim, almost out.

"I got to get out of here!" I screamed, and headed for the air lock, slid the door open. As I whirled to close it, I saw the light gleam out brightly again. I stopped dead, fighting with myself, fighting fear with curiosity.

Every time I got near the forward bulkhead the light grew dim. Every time I drew away from it it got brighter. Now – why?

I went, like a fear-frozen sleepwalker, over to the light. It dimmed. "No!" I breathed. "Don't tell me – bodily aura? That's ghost-story stuff! But –" It certainly looked like it, though. Well – why not? A man was a hunk of matter; matter was a mess of electric charges, positive, negative, neutral. Was

I, by some crazy chance, made up of precisely the right combination of electric charges to increase the quench-field around the U-235 up there? Aw, it was crazy! But – the light did dim when I approached the power plant. The indicator was extraordinarily sensitive – had to be, to record the atomic acceleration in there fast enough to do any good. Maybe then if I got close to it – crawled in next to the plant, it would swing the scales!

With a sob I tore open the repair doors in front of the water jacket, squeezed myself in, hugging the plates. It was hotter than a furnace in Hell's cellar in there, even with an insulated spacesuit on. But what did I care about that? I was going to die anyway. I might as well die doing something about it.

But I'd already done it. The purple glow faded and died, and I knew I was safe. I kissed the hot plates, and I'll have scarred lips for the rest of my life because of it. I broke down and cried like a baby.

It must have been an hour later when I crawled out and pulled myself together. As I climbed out of the suit and strapped it up and turned on the grav again, I thought deliriously of being alive again. Yes, and not only that – rich! Any way you look at it – suppose I was, as I had guessed, possessed of a neutral electric charge? Why, the biggest passenger lines in the System would bid against each other for me! And more – if I handled it right, I could grab the Space Prize for the most important contribution to space commerce when this five-year period was up – five hundred thousand bucks, no less, on the very strong chance that my adventure had some hint in it that the lab boys could develop into something salable. No more worries! No more debts!

And that's how I came in to Eros, laughing like a loon and calling up every newspaper and laboratory in the place. They sent their scientists to look over the old can, and they wined me and dined me and after they found what they found in the ship they very nearly laughed me out of the System. Why?

Well, it's this way. The purple light signal was all right. The quench-field was all right. And there *had* been an imminent atomic explosion in the ship. But not in the ship's power plant. I shouldn't have thought of bailing out. I shouldn't, being a mere space pilot, have tried to think I was an atomic physicist. And – I shouldn't have opened my face about it. Because that atomic explosion was building up in the power plant of my *spacesuit*. And I killed it by crawling into the heart of the ship's big and potent quench-field.

SPALDING
SPORTS SHOW

WHERE ON EARTH DID THAT COME FROM?
THIS? OH, NICK JUST TOSSED IT OVER TO ME
NICK ALTROCK ONCE WALKED EIGHT MEN IN A BALL GAME...
AND THEN PICKED SEVEN OF THEM OFF 1ST BASE
AFTER GIVING A SLIGHTLY SCREWBALL PITCHER CAREFUL ADVICE ON JUST HOW TO PITCH TO A CERTAIN SLUGGER, CASEY STENGEL DEMANDED AN EXPLANATION WHEN THE BALL WENT OVER THE FENCE... AND HE RECEIVED AN OBVIOUS ANSWER!
WHAT KIND OF A BALL DID YOU THROW HIM?
WHY, IT WUZ A SPALDING BALL, MISTER CASEY
• OFFICIAL • American League Ball William Harridge, Pres.
THE CUSHIONED CORK CENTER
REACH
* Official * National League Ford C. Frick Pres.
THE CUSHIONED CORK CENTER
SPALDING

IT HAD TO BE A SPALDING BALL... ONLY SPALDING-MADE BALLS HAVE EVER BEEN OFFICIAL IN THE MAJORS! SPALDING...FIRST IN THE FIVE MAJOR SPORTS... IS YOUR FIRST AND BEST CHOICE NEXT TIME YOU BUY ATHLETIC EQUIPMENT!

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SPALDING

SPALDING
SETS THE PACE IN SPORTS

• Not long ago, we said that we'd be happy to publish student book reviews in this column. Readers in Lower Merion Senior H.S., Ardmore, Pa., took us up on the offer. To celebrate Pan-American Day (Apr. 14), they have written us reviews of some books on Latin America. They are members of The Latin American Club which has helped build up a Latin American Collection in their high school library. Miss Nora Thompson is their faculty adviser.

OF THE NIGHT WIND'S TELLING, by E. Adams Davis. Univ. Oklahoma Press. 1946. $3. Reviewed by Mary Ann Stever.

How much thought have you given to our neighbors south of the border? Surely, at some time you must have wondered about them, their customs, and their life in general. *Of the Night Wind's Telling* is a collection of old Mexican legends which gives a picture of superstitious but charming people.

Part of these stories relate the beliefs of the early Mexicans concerning the mighty power of the gods. The other section of the book presents legends of the City of Mexico.

EAGLE OF GUATEMALA, JUSTO RUFINO BARRIOS, by Alice Raine. Harcourt Brace. 1948. Reviewed by David Shultz.

To the people of Guatemala, the name of Justo Rufino Barrios is synonymous with democracy. Mrs. Raine shows how a humble low-born Guatemalan with a burning desire for a democratic government endeared himself to his countrymen. The greater part of the book is actual history. The hardships and disappointments that Barrios overcame before his dream was realized rival any fictional plot conceivable.

JUAREZ, HERO OF MEXICO, by Nina Brown Baker. Vanguard. 1942. $2.50. Reviewed by Barbara Freney.

A jump from his uncle's shepherd boy to President of Mexico was indeed quite a jump for an ordinary Indian peasant. Yet, such was the accomplishment of the Mexican Lincoln.

All his life Juarez tried to lead his fellowmen in the struggle to rid their country of its self-seeking rulers. When one of these, the "childish" Emperor Maximilian, finally felt the hand of justice, Juarez had his chance to help his country in a new start toward a sunny horizon.

VILLAGE IN THE SUN, by Dane Chandos. Putnam. 1945. $2.75. Reviewed by Jeannette Woolford.

Village in the Sun is written in the glorious technicolor of a Mexican sunset. It describes the lazy, easy life of the very small Mexican village of Ajijic. Chandos tells in a charming, unaffected way of the experiences he had buying property and getting a house built. He gives you the feel of everyday life in a Mexican village.

DOM PEDRO OF BRAZIL, by Mildred Criss. Dodd, Mead. 1945. $2.50. Reviewed by Guita Zimmerman.

The rise and defeat of Brazil's loyal and understanding emperor is depicted by Mildred Criss in her exciting and heart-warming *Dom Pedro of Brazil.* The book carries us along with the emperor through his many trials and tribulations as he tries to make Brazil a noble nation of well-educated and loyal people. He establishes schools, museums, and libraries. His one mistake is spoiling his daughter who causes his downfall.

MEXICAN FOLK PLAYS, by Josephina Niggli. Univ. North Carolina Press. 1938. $2.50. Reviewed by Sara Carter.

Are you interested in reading drama? If so, here is a delightful collection of five short plays written by a Mexican about her native region. "Sunday Costs Five Pesos" is a hilarious comedy about two women who decide that it is too expensive to scratch each other's face on Sunday for in their village "a woman who starts a fight on Sunday must pay five pesos." *Show-people,* the dramatic society of our school, has presented "Sunday Costs Five Pesos" with great success.

DUST ON MY HEART, by Neill James. Scribner's. 1946. $3. Reviewed by Barbara Freney.

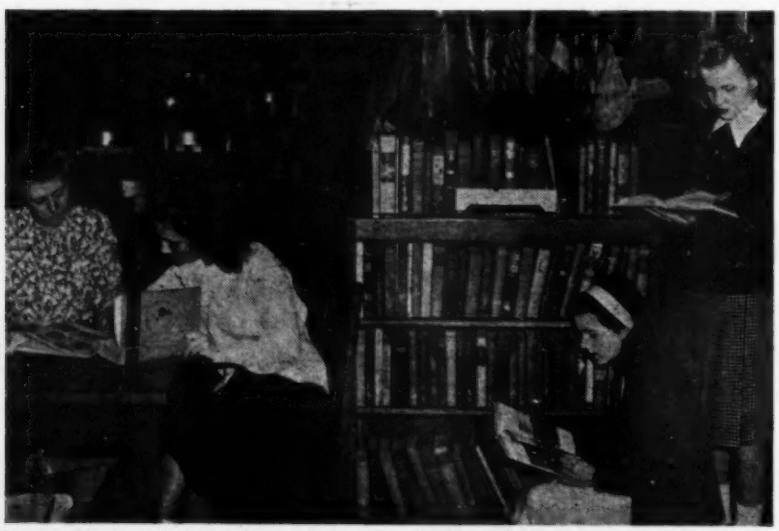
This story of a "petticoat vagabond" who travels through the enchanting land of Mexico holds one's interest. With an interpreter and an American sleeping bag, she roughs it in the dry country of the Otomies. With excitement equal to that of the natives, she witnesses a Mexican Fiesta, climaxed, naturally, by a bull fight. In Oaxaca our traveler visits the famous mica mines which supply the United States with 80 per cent of its mica. She is the only person in the world who has survived a 1,000-foot fall from a volcano.

THE LAND OF THE PHEASANT AND THE DEER, by Antonio Mediz Bolio. Published in Mexico. Reviewed by Sally Sayer.

With the beautiful simplicity of an unfolding flower, these legends of the Maya are related. They lose none of their gracefulness by translation into English; the strength and quiet wisdom of the Indian still walk through the pages. The strange style carries one away to the exotic land of the Maya.

CENTRAL AMERICAN ROUNDABOUT, by Agnes Rothery. Dodd, Mead. 1944. $2.50. Reviewed by Georgia Barclay.

There are beauty and mystery in the six small republics which make up Central America. Five of them—Guatemala, Honduras, El Salvador, Nicaragua, and Costa Rica—won their independence from Spain in the 19th century. Most of the population in two of them is Indian; but white people of European descent live in big plantation houses. When the Pan-American Highway is completed, more people will travel through this land of enchantment.



Lower Merion H. S. students choose books from their Latin American shelf.

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"Pancho" Gonzales, tennis threat.

GIANT Killer

TALL, dark, and dangerous. That's Richard Alonzo (Pancho) Gonzales, the new giant killer of the tennis world.

Pancho is poison to the hot-shot racketeers. Last year, at the age of 18, he knocked off such famous stars as Frank Parker, Bob Falkenburg, and Jaroslav Drobny, the Czech who is rated the world's fifth greatest player.

Out California way, they're now talking about Pancho as the coming national champ. They love the way he plays the game. Everything about it spells C-a-l-i-f-o-r-n-i-a, from his booming, cannonball service to the way he continually charges the net.

He is always forcing the play, socking the ball hard, and taking all sorts of chances. That's the way they teach the game in the movie country, and Pancho has learned his lessons well.

The new ball of fire has all the equipment to go with the "big" game. He is a 6-foot, 2-inch, 185-pounder, with speed to burn and loads of whipcord strength. Nothing bothers him. He never loses his temper and he never lets down when he flubs a shot.

The fans are crazy about him. They like his nice manners, his modesty, and his dark good looks. A Bogart-like scar on his left cheek brings the gals out in droves.

Pancho is an Angeleno born and bred. He attended Edison Junior High and Manual Arts Senior High, winning certificates in football and basketball. His favorite subject was math.

Next to tennis, Pancho's chief hobby is collecting records. He is an Xavier Cugat and Bing Crosby fan. His favorite actors are Cary Grant and Errol Flynn; his favorite actresses—"all the young ones."

Thanks to his fine play last season, Pancho was lifted to No. 17 in the national ratings. If he doesn't crash the first ten this year, I'll eat every one of Roy Rogers' shootin' irons.

SHORT SHOTS

Oklahoma A. & M., Kentucky, St. Louis U.—phooey! When it comes to great basketball records, I'll take the grade-school team from Cherokee, Kansas. When last heard from, the Cherokee Midgets—none of whom weighs over 92 pounds—had won 18 straight games, scoring 505 points to their opponents' 117.

In the grade-school tourney at Os-

MORE AND MORE PLAYERS ARE USING NYLON STRINGS

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BETTER THINGS FOR BETTER LIVING .. *THROUGH CHEMISTRY*

wego, the Cherokee peanuts whitewashed Mound Valley, 73-0; eked out a 45-1 decision over Edna; then fell completely apart, beating Galena by *only* 40-14.

Jack Lavelle, who starts most of the big track meets in the East, had trouble with the starting gun at the Millrose Games in New York. The thing wouldn't go "boom." Jack finally tossed it away and pulled another "gat" out of his pocket.

Thereupon a voice floated down from the gallery: "Hey, Jack, why don't you try using a bow and arrow?"

A fan, a fan, I have a fan! His name is John Edwards, and he hails from San Diego (Calif.) High School. He writes: "One of the features I like best in your magazine is sports. I especially liked your January 19 article in which you listed the great football record of Santa Monica High. Is it asking too much to mention that San Diego High finished second in the Southern California championships?"

The big, tough big-league manager died and went to a certain place far south of heaven. One morning as he was combing the horns out of his eyes, a burly gent stepped up and slapped him on the back.

"Remember me?" he inquired.

"Can't say that I do," replied the manager.

"Well, back on earth I asked you 50 times for a tryout, and you said you'd see me here first."

Ralph Kiner, in three seasons of minor league ball, hit a total of 27 homers. Upon moving up to Pittsburgh in 1946, Ralph bopped 23, then followed with 51 last year. How do you figure that one?

What a difference a year makes! In 1946 Hal Newhouser, Tiger pitcher, won the most games in the American League — 26. In 1947 he *lost* the most — 17.

For a real fancy record, take a look at the Ted Williams story. In six years with the Red Sox, Ted has never failed to hit over .327 and owns a lifetime average of .352. He has led the league in batting three times; in scoring runs, four times; in home runs, three times; and in runs batted in, three times.

A lot of people up Massachusetts way want to know why I left Holy Cross College, the 1946-47 basketball champs, out of my top-ten rankings this year.

Well, at the time I did the picking, the Crusaders had dropped three out of their first eight games, and I figured they had gone sour.

I was wrong. Holy Cross wound up the season with 20 straight wins, then lost a beautifully played game to Kentucky for the Eastern title. I'd say Holy Cross definitely was one of the country's five top teams last season.

— HERMAN L. MASIN, *Sports Editor*

Something important that you should Know . . . the winning secret of "BROAD JUMP JOE"

Look for the Red Ball trade mark in the store and on the sole of the shoe.

For extra speed, for winning form, in jumping, or any activity, wear BALL-BAND ARCH-GARDS. The ARCH-GARD *molded* sponge rubber insoles fit your feet; give firm, but gentle support. The BALL-BAND STA-KLEEN that covers the ARCH-GARD insole resists sweat and dirt, stays smooth, fresh, clean, comfortable. Go to the store where you see the Red Ball trade-mark. Get a pair of BALL-BAND ARCH-GARDS—and have more fun.

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And ARCH-GARD cushions the heel . . . and lessens the shock of running and jumping on hard surfaces.

*Look for the name Arch-Gard on the insole.

Ball-Band

MISHAWAKA RUBBER & WOOLEN MFG. CO., Mishawaka, Ind.

Following the Films

✓✓✓Tops, don't miss. ✓✓Worthwhile. ✓So-so.

Ivan Jandl (left) plays lead role in story of displaced children.

✓✓✓**THE SEARCH** (M-G-M. Produced by Lazar Weschler. Directed by Fred Zinnemann.)

The Editors have chosen M-G-M's *The Search* as their Movie-of-the-Month for April. This is a film so beautifully directed and so genuinely moving that it may well be the Movie-of-the-Year. We predict it will rate top honors on a lot of ten-best lists next January.

For his theme, Director Fred Zinnemann turns his cameras on the displaced and homeless children of Europe. *The Search* is the simple story of a boy's search for his mother in war-torn Germany — and of her search for him.

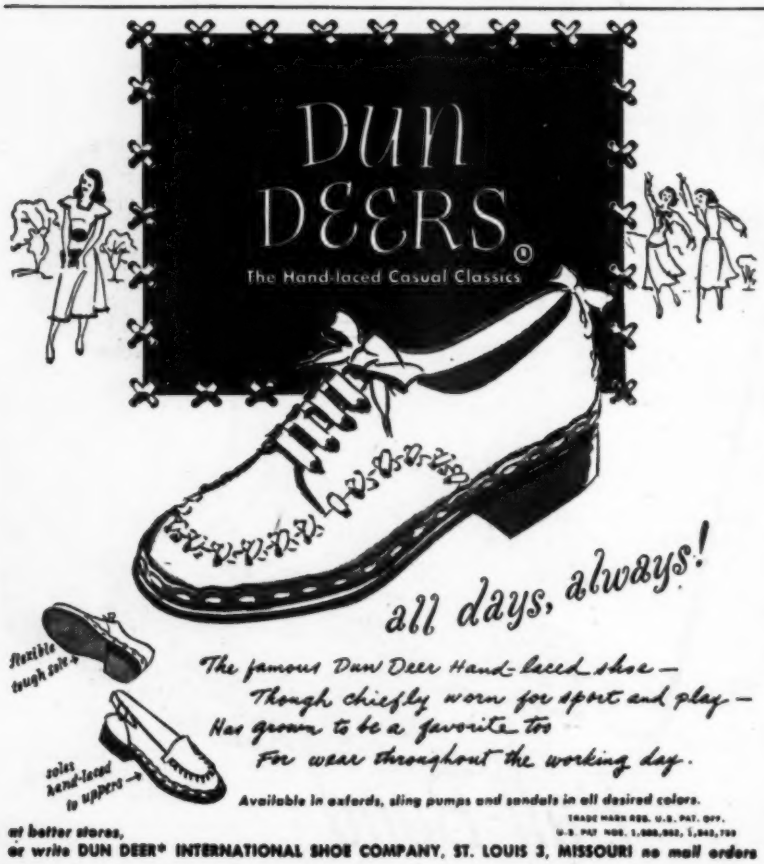
We probably have never seen as sensitive and fine a performance by any young actor as the one given here by nine-year-old Ivan Jandl, a Czechoslovakian boy. Ivan plays the role of Karel Malik, a boy who has been separated from his mother in a concentration camp.

***The Search* was filmed in Occupied Germany. Note rubble (background).**

The story was filmed in the U. S. Zone of Occupied Germany; the countryside and rubble-strewn cities of Germany give the action an authenticity that would have been impossible to achieve in a studio. In addition, most of the cast are the townsfolk and children of Europe — the people who have actually experienced the terrors of the last war. There are only four professional actors (Montgomery Clift, Aline MacMahon, Jarmila Novotna, and Wendell Corey), and even these are not star names. The tragedy we see on the faces of the ragged, hungry, lifeless children is real tragedy, the tragedy that stalks Europe today—the most moving indictment of war that there is.

Movie-of-the-Month Seal for April is awarded to M-G-M for film, *The Search*.

When we first meet these children of Europe in an UNRRA re-allocation center, we hardly recognize them as children. They move like weary, old men and women. There is no laughter; in fact, there isn't even any conversation. These children have forgotten how to play in their frantic effort to survive. The only expression in their eyes is one of terror. They have learned to distrust everyone. The UNRRA uniform does not reassure them; after all, it was adults in uniforms who tortured them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and took their parents to the gas chambers.

Karel Malik, the boy whose story the film elects to tell, has forgotten how to say anything but a quavering "I don't know." No amount of questioning by the sympathetic UNRRA officials can persuade him to produce the faintest clue as to where he came from or what his name is. The past few years have been so terrifying for him that his mind has blacked out all memory of a home.

When Karel and some other children are loaded into Red Cross trucks to be transported to another UNRRA center, panic breaks out. It was in such trucks as these that many of them had watched their parents ride off to the gas chambers. In terror, the children in one truck smash its rear windows and flee. Most of them are rounded up by the officials, but two boys escape. One of them is Karel.

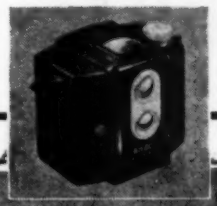
After wandering among the ruins of the city for a while, hunger finally forces Karel to accept some food from an American soldier (Montgomery Clift). This meeting is the beginning of Karel's rehabilitation. The soldier takes the boy home, feeds and clothes him, and finally wins his affection. He teaches Karel English and tries to find some clue to the boy's identity.

The photography in this film is so dramatically telling that we would have caught all of the film's meaning if every line of dialogue had been chopped out of the sound track. There is little dialogue as it is; it serves mainly to underline what our eye has already deduced from the truly moving pictures on the screen.

Several foreign film companies have been earning praises recently for the realism of their settings and photography. That a picture with as much heart, as much timeliness, as much realism, and as important a message as *The Search* should come from an American film company is cause for great pride.

GIs use pictures in teaching Czech boy (Ivan Jandl) to speak English.

How to take pictures of your friends



by Ken Johnson

I'll bet my last pair of blue jeans that the trouble with many of the pictures you take of your friends and family is that the people are too far away.

Sure, you get the whole person into the picture—but he's so far off you can't see his face or expression. Can barely tell whether he's laughing or crying.

All of which leads me to this: Whenever you take pictures of people, get up really close to them—anywhere from six to eight feet. You'll be sure of getting a good-sized image on your film.

Above all, never ask the person to look directly at the camera. See that he's looking away from it (the way the boy is doing in the picture above).

Another tip (and I think this is the most important of all), be sure you load your camera with Ansco Film. Because Ansco Film has "*wide latitude.*"

And this "wide latitude" compensates for minor exposure errors—helps you get a picture every time you click the shutter. Use Ansco Film when you want to be sure of getting the picture.

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If you really want to become a top-notch photographer, get yourself a copy of Ansco's booklet, "Better Photography Made Easy."

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BOY dates GIRL

THERE'S always a girl-next-door. You don't need radar to keep that situation under control. And Carol Calhoun sits kitty-corner from you in history class. It's not too hard to make history when the Cleopatra of the century is within talking distance. When the girls are on hand, you can handle them.

But complications set in, when the palpitations are caused by the girl who's far, far away. Maybe you met her when your family was up at the lake last summer, or when the team played basketball in the next county. Maybe she's the girl back home, when you're the boy away at school. Anyway you met her, and you can't forget her. The burning question is: Does absence make *her* heart grow fonder?

Q. *I attend a military academy and "go steady" with a girl back home. She dates other boys when I'm at school, although she still wants to be my girl. I realize it's selfish to ask her not to date*

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by Gay Head

anyone else, but should she when we're supposed to be "steadies"?

A. No girl should give her promise true to one boy and break it the minute he's out of sight. But neither should a boy propose a "steady" status when he can only furnish escort service a few times a year.

Sure, it boosts your ego to display a life-size photo of Mary Lou on your desk at school. You like to tell the boys that that slick item is *your girl* and that she's keeping the home fires burning – *for you.*

Maybe Mary Lou did agree (?) to "go steady." Chances are, you took advantage of her liking you and talked her into it. She may like you better than any other boy she knows. However, your absence doesn't automatically sour her on sundaes, movies, bowling, or dancing. She can roller skate with Ted and dance with Tank, and still devote her dreams to you. The quickest way to forfeit your priority on her affections is to demand that she give up "life, liberty, and the pursuit of happiness" until you happen to be in town.

Q. *I met a girl three years ago while on vacation. We went horseback riding and to the movies a few times. We had fun when we were together and still do when we see each other, which is only once or twice a year. We write regularly, but I know my letters are terribly dull. How can I pep them up?*

A. *Don't* fill your letters with romantic reminiscing about *that wonderful summer* or your last meeting. You want to be more than a pleasant memory, don't you? Friendship has a future only when you write your letters in present tense. *Do* tell Scotty about your interview for a summer job, about your Teen Canteen's new project, or about the exciting new book on horses you're reading.

Don't just compile a brief list of what you've done each day for the last week . . . *"I got to school on time today, had lunch with Joe and Peg-Leg, and made a book report in English class. After school I went to baseball practice, and tonight to a terrible movie . . ."* Unless you're key witness to a murder, no one wants a minute-by-minute account of your activities. *Do* pick out the highlights in your week – the most exciting, funniest, or most embarrassing incidents – and give a full account of those.

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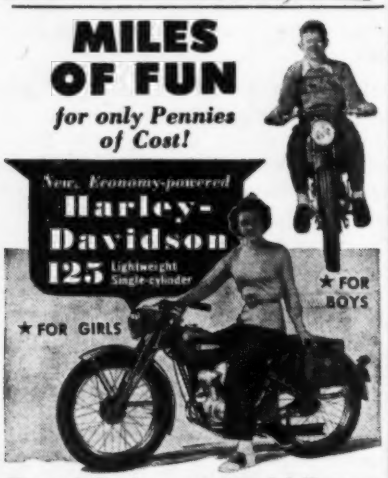

Hi gang! Here's your motorcycle! Now you can go places safely anytime, have more fun . . . riding to school, town, visiting friends, sight-seeing, doing errands, earning extra cash! You'll thrill to this new Harley-Davidson 125 . . . it's so smooth, so peppy, so light and easy to handle. You'll be surprised, too, how little it costs to own one, how much pleasure you'll get for only pennies of cost. Made by the world's largest manufacturer of motorcycles, your assurance of quality and performance. See your dealer and take a ride.

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Don't pepper your letter with the names of half a dozen friends Scotty's never heard of—unless you explain who they are. Scotty doesn't know Joe and Peg-Leg, and frequent mysterious references to them will only impress her with the fact that she's out of your world. Why not tell her that Joe is the sheik of Saunders High and your sidekick on many a canoe trip, and throw in a little description of the fellow. You've had to write descriptions in English class. Put what you've learned to work. If Scotty can visualize you and your gang in action, she won't feel distance is an obstacle.

Don't forget that your correspondence has to take the place of conversation. Conversation should be a two-way affair. Don't begin every sentence with the first person. Toss some questions Scotty's way. Is she still planning to take that cycling trip through New England? Has she persuaded her Dad to let her make the cellar into a game room? Who's she betting on in the Presidential race? Start arguments and discussions. They're the spice of the conversations you have with the kids at school. And a lively interchange of ideas is the best way to keep a correspondence thriving.

The effect of a good letter is like that of a suspenseful serial story. You'll leave your reader gasping for the next installment. Believe it or not—women have been wooed and won via the U. S. mails!

Q. *Last summer while I was giving swimming lessons, I met a girl who took my fancy. She lives out of town; however, she has asked me to visit her. Since there is only one bus a day from her town, I would have to stay overnight. Would that be proper? How should a boy act when he is an overnight guest?*

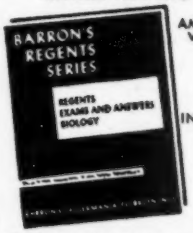
A. The invitation to spend the night should come from both the girl *and* her mother. If you accept you should let your hostess know when you expect to arrive, and when you plan to leave. It's nice, but not necessary, to bring your hostess an inexpensive gift—flowers or candy.

Other than your best behavior, nothing special is required of you. Be prompt for meals. Observe the customs of the house; if the Browns are in favor of early curfews, don't keep Sally up until midnight. Make a special effort to get to know Mr. and Mrs. Brown; contribute your share to the conversation. Be quick to volunteer to help Mrs. Brown set the table for dinner or to dry the dishes for Sally. Be enthusiastic about whatever Sally or her family may have planned in the way of entertainment, but don't sit back and wait to be entertained.

• The taut, high pitch of VICTOR *Strings that Win* foretells winning speed on every stroke.

REGENTS EXAMS & ANSWERS

BARRON'S QUESTION AND ANSWER BOOKS ALWAYS MEET THE TEST



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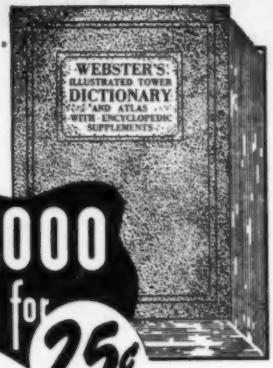

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Accent on Youth

At one *Breakfast in Hollywood* broadcast Tom Breneman awarded the traditional orchid and kiss to an 82-year-old woman as the oldest guest on the program. After the show was off the air, another woman made her way to the microphone, looked cautiously back at her table and whispered to Tom:

"Just think – I could have had that orchid. I was 83 years old yesterday."

"Why didn't you say so?" Tom asked in surprise.

"Oh, I didn't dare," the woman whispered. "You see, my husband's with me – and he thinks I'm only eighty-one!"

Tom Breneman's Magazine

Thankful

Little Tobey was telling his mother about the day in school. "Mother," he said, "today our teacher asked me whether I had any brothers or sisters, and I told her I was the only child."

"And what did she say?" asked his mother.

"She said, 'Thank goodness!' "

The Kablegram

Light-Headed

Once while campaigning in the state of one of his opponents. William Howard Taft was constantly interrupted by heckling from the gallery. Finally a cabbage landed on the stage and came to rest near his feet.

Pausing in his address, Mr. Taft peered at the vegetable intently and then remarked, "Ladies and gentlemen, I see that one of my adversaries has lost his head."

The Kablegram

The Hard Way

"How far to the nearest town?" inquired the motorist.

"Five miles, as the crow flies," was the reply.

"How far," persisted the motorist, "if the crow has to walk, carrying a can of gasoline?"

Louisville Courier-Journal Magazine

FREE! TENNIS BOOK

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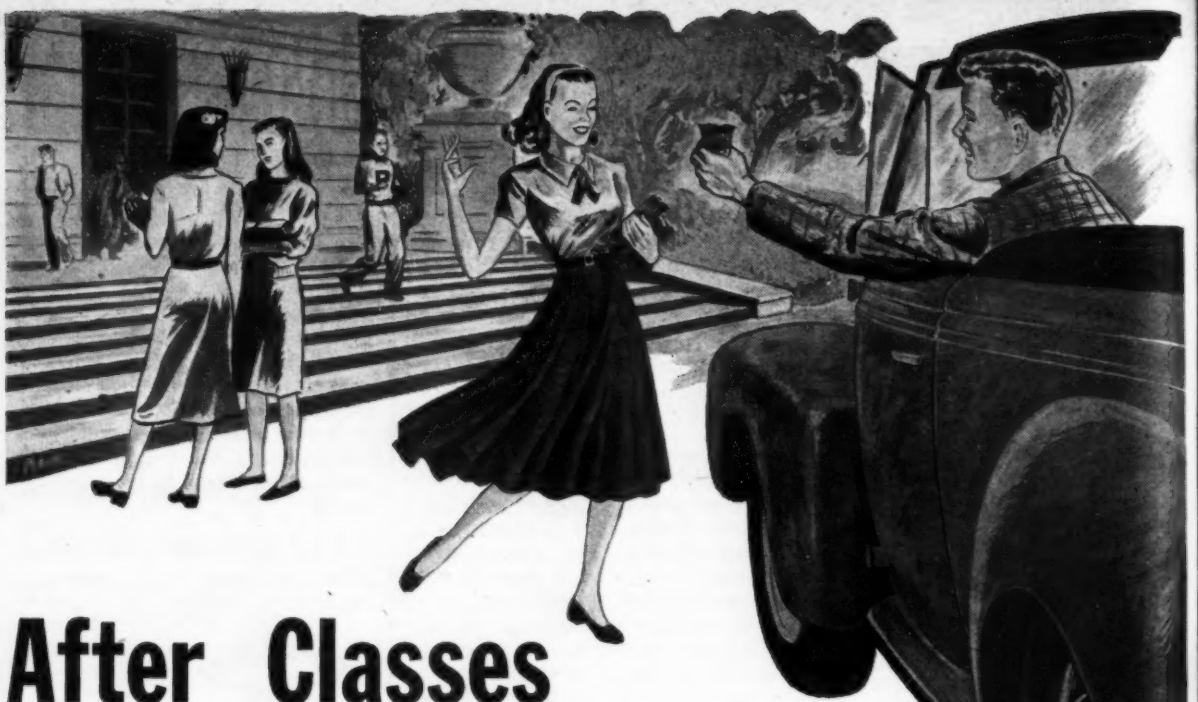

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time out for Planters

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SCHOLASTIC Teacher EDITION

Senior Scholastic

APRIL 12, 1948

Teaching Aids for SENIOR SCHOLASTIC

BASED ON MATERIALS IN THIS ISSUE

FOR SOCIAL STUDIES CLASSES

Atomic Energy for Peace

Atomic energy is here to stay, but are *we*? We are, if the world can win its struggle to control the use of atomic weapons. And if that victory is won, atomic energy can be man's most useful servant – with uncounted skills in every field.

This special issue is devoted to an examination of these peacetime possibilities of atomic energy. Written and edited by *Senior Scholastic*, all of the material has been checked and approved by the United States Atomic Energy Commission.

We suggest that social studies teachers invite science teachers and classes to participate is discussing this special issue, which includes material on pages 3, 7-12, and 16, as well as related features on science in the English section.

GUIDE FOR A LESSON PLAN

Motivation

As a young man, your father may have imagined that an airplane might one day fly the Atlantic Ocean. Your grandfather may have dreamed, 50 years ago, of the scientific marvel of television. What scientific wonders can *you* foresee? Will atomic energy one day heat your home? Will your children be safe from serious diseases because of atomic isotopes? Will atomic space ships carry you around the world in a few hours? How many *new* dreams does this special issue give you?

Check-Test Questions

For *Atoms and Isotopes* (p. 7): Why are atoms called the building blocks of matter? What is an atom? What are

(*Concluded on next page*)

FOR ALL CLASSES

Read About the Atom

See Bibliography in *Senior Scholastic*, March 8, page 3-T.

Plays: *Set Your Clock at U-235* in *Untitled and Other Radio Dramas*, by Norman Corwin. Henry Holt and Co. 1947. $3. *Dawn over Zero*, by Hallie Flanagan Davis. Samuel French. 1947.

Books and Pamphlets: *Peace or Anarchy*, by Cord Meyer, Jr. Little, Brown and Co. 1948. $2.50.

Magazines and Magazine Articles: *Bulletin of the Atomic Scientists*, published monthly by the Atomic Scientists of Chicago, 1126 E. 59th St., Chicago 37. 25 cents. *Monsanto Magazine*, December, 1946, published by Monsanto Chemical Co., St. Louis, Mo.

Operation Atomic Vision. Teaching unit for high school students prepared by Hubert M. Evans, Ryland W. Crary, and C. Glen Hass, 112 pp. Published by National Association of Secondary-School Principals, 1201 Sixteenth St. N. W., Washington 6, D. C. Available to teachers on request.

Pan-American Day

Pan-American Day will have its eighteenth annual observance on April 14. This year's theme is, "The Americas Must Serve Mankind."

Free and inexpensive materials giving information and suggested activities for the day can be obtained from the Pan American Union, Washington, 6, D. C., and the U. S. Office of Education, FSA, Washington 25, D. C.

For a new biographical series on American heroes, write to the American Historical Series, Du Pont Circle Building, Washington 6, D. C. 15c each.

FOR ENGLISH CLASSES

Science Literature

GUIDE FOR A LESSON PLAN

This Guide is based on pages 3, 17-21, and 24-26 in this issue. See "Read All About It" (p. 24).

Aims

To acquaint students with some of the literature of and about the scientific world; to interest students in the field of science; and to stir students' imaginations.

Motivation

Can truth be stranger than fiction? Or is that just a "moldy" saying? Do fiction writers sometimes possess scientific knowledge which enables them to predict "things to come"?

Check-Test Questions

For *Universe Unlimited* (p. 17): Why did people in the Middle Ages link science with magic and the supernatural? What is the play, *Doctor Faustus*, about? The novel *Frankenstein*? The play, *R.U.R.*, written by Karel Capek? What "scientific fiction" did Edgar Allan Poe write? Jules Verne? Frank R. Stockton?

For the play, *Pilot Lights of the Apocalypse*, by Dr. Louis N. Ridenour: What Government official visits the operations room of the Western Defense Command? Who guides it? Why are thousands of bombs kept suspended in space over the earth? How does the counterattack control board work? When does the red light come on? What parts of the world are mined?

(*Concluded on next page*)

For Social Studies Classes

(*Concluded*)

three basic particles of the atom? How are they measured? What is an isotope? What does radioactive mean? What are two of the most important radioactive elements? (Uranium and thorium.)

For the *Atomic Energy Commission chart* (p. 16): Identify the following men: David E. Lilienthal, Carroll L. Wilson, and Senator Bourke B. Hickenlooper.

For *Atomic Energy in Overalls* (pp. 8-9): What are the prospects for atomic energy as a source of fuel and electric power? For use in big planes and ships? For central power stations? How ample is our supply of raw materials needed to make atomic energy?

How is atomic energy being used to advance agriculture? How are tracer atoms used? What is a Geiger counter? How is atomic energy being used in industry and engineering? In the study of friction? In metallurgy? In discovering oil lands?

What three goals do medical scientists have in mind in studying atomic energy?

Student Activities

Give oral reports on the members of the Atomic Energy Commission. See *Who's Who in America* and *Current Biography*. And p. 16 in this issue.

Make an "Atomic Energy Dictionary." Start with some of the terms used in this special issue and define each simply. (See page 12.)

Make an atomic energy notebook of clippings and photographs about the atom – both for peace and wartime use.

Watch for announcements of radio programs discussing problems connected with atomic energy. Report to class on what you read and hear.

Write a story or play showing what life in the United States may be like thirty years from now as a result of the development of atomic energy.

Invite a local doctor, laboratory technician, physicist, or agricultural expert to give a short speech on possible uses of atomic energy in his field.

Class Discussion

Can the United States afford to feel safe because we possess the atom bomb secret? Do you think it's possible for other nations to develop an atom bomb by themselves?

Is it any use to try to preserve our "secret"?

The "New" Immigration (p. 12)

Up to 1890 what countries did most immigrants to America come from? Where did most of them come from in the decades immediately following 1890? What were some of the important differences between the "old" and the "new" immigrants? How did these differences affect America? Describe immigration to America from China, Japan, Mexico, and Canada.

Do Americans emigrate from the United States to settle in other countries? (Yes, but not in large numbers. Some Americans, mostly ex-GIs, have settled in Australia since the war. Other Americans live permanently in South America, while a few Americans can be found in nearly every country of the world. Why have we never had any major waves of *emigration*?

Answers to Citizenship Quiz (p. 11)

The Atomic Age: 1-N; 2-L; 3-L; 4-N; 5-L; 6-L; 7-N; 8-N; 9-L; 10-L; 11-N.

Who Am I? 1-David E. Lilienthal; 2-Sen. Bourke B. Hickenlooper.

Your Atomic Quotient: 1-2-3-Divisions of Raw Materials, Research, Engineering, Production, Military Application, and Biology and Medicine (any 3). 4-elements. 5-6-7-electrons, protons, neutrons. 8-9-weight, number. 10-isotope. 11-uranium. 12-cloud chamber; 13-nucleus.

The "New Immigration": 1-c; 2-b; 3-c; 4-b.

For English Classes

(*Concluded*)

Why do the officers worry about shooting stars? Why do the officers think that Denmark may be to blame for the "blotting out" of San Francisco? What did Colonel Sparks do to protect the United States?

For *Young Voices* (p. 23): What are the regular features of *Astounding Science Fiction*? What is the difference between this magazine and other pulps, according to the author? What evidence is there to show that the authors and editors of the magazine have scientific backgrounds?

For the short story, *The Purple Light*, by Theodore Sturgeon (p. 25): What job is the narrator engaged in, according to this story? Describe his plane. How did he know that there was likely to be an atomic explosion? What should he do when he received such a warning signal? Who invented the warning device? Why did he hesitate to leave the plane? What happened to the purple light whenever he approached the forward bulkhead? Why did he think he would become rich when he landed? What had really caused the purple light to turn on?

Pan-American Week

The Pan American Union is observing Pan-American Week this week. See "Speaking of Books" on page 30 of this issue for student-written reviews of books about Latin America.

Your students are cordially invited to send in their book reviews to this *Scholastic* feature.

Student Activities

Secure a number of issues of one of the following science magazines and, after careful study of the contents, write a review of the magazine (see page 23 of this issue for example): *Popular Science, Science News Letter, Scientific American, Science Digest*, and *Science Illustrated*.

Were you a reader of such popular "endless chain" books as the Tom Swift series when you were young? If you were, you know that they're imaginative fiction dealing with "scientific" inventions. Study a Jules Verne book (*From the Earth to the Moon, Twenty Thousands Leagues Under the Sea*, etc.) to discover why Verne's scientific fiction makes school book review lists and the Tom Swift books don't.

Give a three-minute oral report on Dr. Louis N. Ridenour, author of this week's play (p. 18). See end of play for brief biography.

Appoint a student committee to study the radio programs of local stations and of network shows to discover radio programs on scientific subjects. Another committee can make a list of books (preferably fiction) and stories with scientific backgrounds which are in the local library.

Application

For class discussion: "The modern 'scientific age' has changed the interests and tastes of modern readers." Do modern readers tend to have the "I'm from Missouri" attitude? Do they shy away from ghost stories and any other types of writing which portray acts not readily explainable by down-to-earth facts?

Following the Films (p. 37)

"The Search," *Scholastic's* choice for the Movie-of-the-Month, is reviewed.

Answers to "Read All About It" (p. 24)

I. The Atom – for Peace?: 1-b, 2-b, 3-a, 4-a, 5-b.

SENIOR SCHOLASTIC published weekly, September through May inclusive except during school holidays and at mid-term. Entered as second-class matter at Post Office at Dayton, Ohio, under Act of March 3, 1879. Contents copyright, 1948, by Scholastic Corporation. SUBSCRIPTION PRICES: Social Studies or English Edition: Five or more to one address, $1.20 a year each (32 issues), 60 cents a semester each (16 issues). Combination Edition: $1.50 a year, 75 cents a semester each. Single subscription, Teacher Edition, $2.50 a school year. Single copy (current school year), 10 cents each. Office of publication, McCall St., Dayton 1, Ohio.

TOOLS FOR TEACHERS

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SCHOLASTIC FEATURES COMING NEXT MONTH—HELPFUL RESOURCE MATERIALS

Communists

Democracy Series No. 29 in *Senior, Junior,* and *World Week*

PAMPHLETS: *Communism in America,* B. W. Patch (Vol. 2, No. 20, '46), Editorial Research Reports, 1205-19th St., Washington 6, D. C., 75c to libraries, $1 to others. *Communism in Action,* Legislative Bureau of Congress ('47), Government Printing Office, Washington 25, D. C., 40c. *How to Identify a Communist,* Friends of Democracy, 137 E. 57 St., New York 22.

ARTICLES: "Inquiry into the Communist Mind," H. Callender, *New York Times Magazine,* March 24, '46. "Communism Is Un-American," *American Magazine,* July, '46. "Turn the Light on Communism," R. M. La Follette, Jr., *Collier's,* Feb. 8, '47. "It's Tough to Be a Communist," I. Ross, *Harper's,* June, '46. "Report on the Communists," H. Raskin, *New York Times Magazine,* March 30, '47. "U. S. Communist Party," Arthur Schlesinger, *Life,* July 29, '46. "How to Spot a Communist," Leo Cherne, *Look,* March 4, '47.

BOOKS: *American Communist,* James Oneal and Gustave Werner (Dutton, '47), $5. *America, Russia, and the Communist Party in the Postwar World,* John L. Childs and George S. Counts (Day, '43), $7.

FILMS, FILMSTRIPS, AND RECORDINGS: See previous Democracy Series.

Books that Shook the World

May 10 in *Senior* English Edition

PAMPHLETS: *Good Reading* (p. 19, '47), Penguin Books, 245 Fifth Avenue, New York 16, 40c. *Classics of the Western World,* edited by A. W. Brown and others ('44), American Lib. Assoc., 520 N. Michigan Ave., Chicago, Ill. $2. *What Is America Reading?,* Harrison Smith and others (Reviewing Stand, Vol. 6, No. 6, '46), Northwestern Univ., Radio Dept., Evanston, Ill., 10c.

ARTICLES: "Friends to Everyone," Louis Untermeyer, *Senior Scholastic,* Feb. 25, '46. "Easy Chair," Bernard De Voto, *Harper's,* Dec., '47. "Power of Books," H. M. Tomlinson, *Atlantic,* Dec., '47. "Balanced Reading Diet," A. M. Springer, *Wilson Lib. Bulletin,* April, '47.

BOOKS: *American Spirit in Letters,* Pageant of America, Vol. II (Yale Univ. Press. *Selected Work,* Thomas Paine (Duell, '45), $3.50. *Poor Richard's Almanack,* Benjamin Franklin (Peter Pauper, '39), $2. *Essays,* Ralph Waldo Emerson (Macmillan, Modern Library, '40), $1.25. *Complete Tales and Poems,* Edgar Allan Poe (Macmillan, Modern Library, '38), $1.25. *Leaves of Grass,* Walt Whitman (Macmillan, Modern Library, '40), $1.25. *Uncle Tom's Cabin,* Harriet Beecher Stowe (Grosset, '43), $1. *Moby Dick,* Herman Melville (Heritage, '43), $1.95. *Thoreau, Reporter of the Universe* (McClelland, '39), $2.75. *Red Badge of Courage,* Stephen Crane (Macmillan, Modern Library, '42), $1.25. *Adventures in Reading,* May Lamberton Becker (Lippincott, '46), $2. *Enjoyment of Literature,* Elizabeth Drew (Norton, '35), $2.75. *Books that Changed Our Minds,* Malcolm Cowley and Bernard Smith (Doubleday, '40), $2.50. *Books that Have Shaped the World,* Fred Eastman (American Library Assoc., '37), $1.

Careers Ahead

April 26 to May 17 in *Practical English*

Here are books on how to find—and get—the job you want.

Retail Sales Workers, Picture Fact Associates (Harper, '41). *Jobs Ahead,* Reginald M. Cleveland and Frank B. Latham (Appleton-Century, '46), $2.50. *500 Postwar Jobs for Men,* Vocational Guidance Research (Doubleday, '45), $2.50. *Encyclopedia of Vocational Guidance,* edited by Oscar J. Kaplan, Two Volumes (Philosophical Library, '48), $18.50. *How to Find the Right Vocation,* Harry D. Kitson (Harper, '38), $2.50. *The Job That Fits You—and How to Get It,* John and Enid Wells (Prentice-Hall, '46), $3.75. *Career Opportunities,* edited by Mark Morris (Progress Press, '46), $3.25. *Government Jobs and How to Get Them,* edited by Sterling D. Spero (Lippincott, '45), $2.95. *Occupational Information; Its Development and Application,* Carroll L. Shartle (Prentice-Hall, '46), $3.50. *Everyday Occupations,* Mildred Davey, Elizabeth Smith, and Theodore Myers (Heath, '41).

Coming Up!

In Senior Scholastic

April 19, 1948

Social Studies: The Draft and Universal Military Training. Switzerland. Hats in the Ring — Warren and Martin.

All Classes: Commager: Rise to World Power. Democracy Series — Satellite States and Parties.

English Classes: Theme — Plays and Play Reading. Condensed version of Anthony and Cleopatra, by Shakespeare. Poetry in the Theater. Short Story — Love Is Kind of Fragile, by Robert M. Ross.

April 26, 1948

Social Studies: The E.R.P. Goes through Congress. Hats in the Ring — Senator Arthur Vandenberg.

All Classes: TR and the Big Stick. Democracy Series — Front Groups and Fellow Travelers.

English Classes: Theme — Music and the Dance.

Polar Worlds

May 10 and 17 in *Junior Scholastic*

See next "Tools for Teachers" for more on Arctic and Antarctic regions.

ARTICLES: "Tidings from the Bottom of the World," F. Ronne, *N. Y. Times Magazine,* Nov. 23, '47. "Who Owns Antarctica," W. J. Lederer and S. V. Jones, *Saturday Evening Post,* Dec. 13, '47. "Icebergs Bear Down," E. P. Morgan and F. Sparks, *Collier's,* June 14, '47. "Report from Antarctica," T. Henry, *Popular Mechanics,* April, May, June, '47. "Arctic Gardens," E. L. Fleming, *Atlantic,* May, '46. "Arctic: Key to World Strategy," *Life,* Jan. 20, '47. "America's New Frontier, The Arctic," H. W. Baldwin, *N. Y. Times Magazine,* March 17, '46.

BOOKS: *Within the Circle; Portrait of the Arctic,* Evelyn Stefannson (Scribner, '45), $2.75. *Unsolved Mysteries of the Arctic,* Vilhjalmur Stefansson (Macmillan, '39), $3.50. *Heroes of the Farthest North and Farthest South,* John MacLean and Chelsea Fraser (Crowell, '38). *Antarctic Ocean,* Russell Owen (McGraw-Hill, '41), $3. *Discovery; the Story of the Second Byrd Antarctic Expedition,* Richard Byrd (Putnam, '35), $3.75.

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Off the Press

Compulsory Federal Arbitration of Labor Disputes, compiled by Julia E. Johnsen. H. W. Wilson Co., 1947. 316pp. $1.25.

Controversy over the desirability of compulsory Federal arbitration of labor disputes has recurred frequently in American labor history. This recent addition to "The Reference Shelf," a debaters' favorite, is well timed with the growing strength of labor unions in public-service industries.

Authorities discuss the problem with strongest advocates representing the pros and cons. All articles are drawn from responsible publications in labor, business, and educational fields. An extensive bibliography is appended.

Spanish Card Games. Language Institute, Inc., Allentown, Pa. $4.95 per complete set.

Our friends who are language teachers tell us that there must be easier ways to earn a living. Perhaps the teaching of Spanish vocabulary and grammar will be easier with a new teaching device whereby students learn to read, write, and speak Spanish by playing cards. The cards are beautifully illustrated and clear instruction books are furnished.

Games are also available for learning French by this method.

Race and Nationality As Factors in American Life, by Henry Pratt Fairchild. Ronald Press, 1947. 216pp. $3.

Professor Fairchild is under no illusions "that the solution of our race and nationality problems is going to be easy." He makes it clear, as have many before him, that "race" is a much abused concept and should not be confused with nationality. He is unfavorably disposed towards the "dilution" of American nationality.

There are chapters on "The Race Controversy," "The Jews," "The Negroes," and the effect of religious and racial differences on American life. As a popularization of scientific concepts the book falls short in that its recommendations for mitigating intolerance are nothing more than generalities.

Leadership for Horizon Club. Camp Fire Girls, 16 E. 48th st., N. Y. 17. 31pp. 35c.

Although this pamphlet was prepared primarily for advisers of Camp Fire Girls, it will be helpful to all who teach teen-agers. Clues to understanding young people, qualifications for wiser advisers, and constructive program ideas are presented.

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